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THE STANDARD AMERICAN

POULTRY BOOK.

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THE STANDARD

AMERICAN

POULTRY BOOK.

A GUIDE TO

PROFITABLE POULTRY KEEPING.

NEW YORK:
W. S. TRIGG, Publisher,
146 Duane St., New York.

1886.

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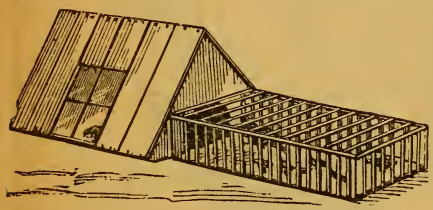
1886.

The Standard American Poultry Book.

A Poultry House for Chickens.—The poultry house we have illustrated is designed for young chicks. It can be attached to a coop, and is made of laths. It is the length of a lath, and half a lath in height.

Such an arrangement allows the mother some room to move about, and enables the young chicks to reach air and sun. Almost any bright boy can nail the laths together, and it will materially increase the chickens' chances of life. Remember that the first few days are the most critical and require extra attention.

More fouls are destroyed in infancy, like humans, by injudicious feeding than at any other time. The first four weeks' management of the young chicks is everything, for no after cares can compensate for neglect during the critical period. For the first twenty-four hours no food should be given the chicks of any kind. At first there may be given hard-boiled egg, chopped fine. This need only be given for two or three days when the food should be changed to one consisting of oatmeal cooked in milk, to which an egg has been added. The second week the milk and oatmeal gruel, stiffly made, should be continued, and good wheat screenings allowed also. After the second week the food may be varied so as to consist of anything they will eat, but do not confine them to a single article of diet, as disease of the bowels may occur. Green grass, cooked vegetables and milk may be given frely. The chicks should not be allowed to roam outside with the hen, if possible, until the sun is well up, as dampness is more injurious to them than cold. When very young feed every two hours, as feathers, bone and meat are forming fast, requiring plenty of nourishment. When cleanliness is observed but few diseases appear. Never let a surplus of food remain after the feeding is over, but see that they are sufficiently supplied before taking the excess away. Young chicks are not troublesome to raise if a little system and care are practiced.

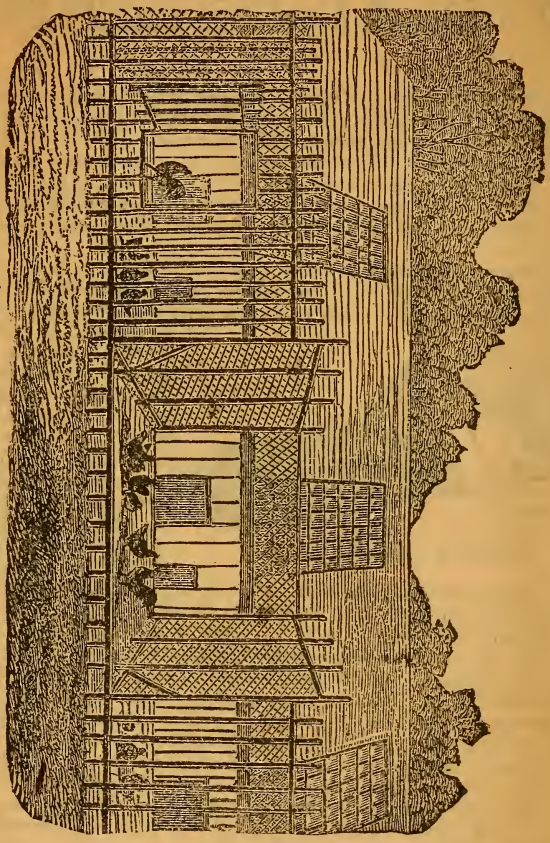


A POULTRY HOUSE FOR CHICKS.

A Model Hennery.—The breeding of new and choice varieties of poultry has grown to be quite an extensive industry in this country during the past few years, and it is not entirely confined to those who make it a business, either, as many of our farmers have learned, at last, that it pays to devote more time and attention to the raising and care of poultry than they formerly were willing to give to it. The model hennery herewith illustrated and described contains all the essential requisites for convenience, cleanliness, the

health of the fowls, and the separation of the different varieties, together with all the modern improvements, from which many good hints may be obtained, if not wishing to adopt the plan just as it stands.

This building is nearly 75 feet long, 13 feet high, and 12 feet wide. It is built of wood, the roof shingled. To the highest pitch of the roof it is 13



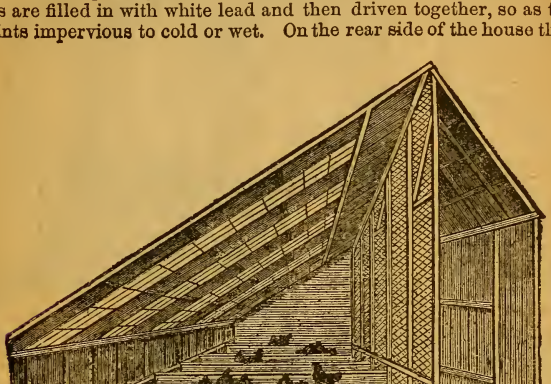
A MODEL HENNERY.—ELEVATION.

feet. The elevation or height from the ground or foundation in front is 4 feet, which cuts a twelve-foot board into three pieces; the length or pitch of the roof in front is 12 feet—just the length of a board, saving a few inches of a ragged end; the pitch of the rear roof is 6 feet, and the height of the building from the ground to the base of the roof is just 6 feet, which cuts a twelve-foot board into two pieces. The ground plan and frame work are planned on the same principles of economy of timber. By this plan no timber is

wasted, as it all cuts out clean; there is also a great saving of labor. The foundation of the building rests on cedar posts set four feet into the ground.

This house contains eight pens, each one of which will accommodate from twenty-five to thirty fowls; each pen is nine feet long and eight feet wide. All the pens are divided off by wire partitions of one inch mesh. Each pen has a glass window on the southern front of the house, extending from the gutter to within one foot of the apex of the roof, fixed in permanently with French glass lapping over each other, after the fashion of hot-bed sashes; they are about eleven by three feet. Each pen is entered by a wire door six feet high, from the hallway, which is three feet wide; and these doors are carefully fastened with a brass padlock.

The house is put together with matched boards, and the grooves of the boards are filled in with white lead and then driven together, so as to make the joints impervious to cold or wet. On the rear side of the house there are



A MODEL HENNERY.—END VIEW OF INTERIOR.

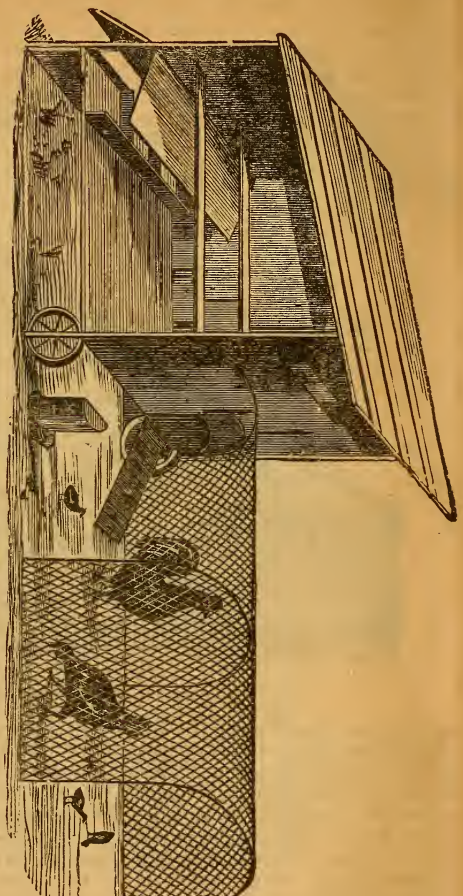
four scuttles or ventilators, two by two feet, placed equidistant from each other, and to these are attached iron rods which fit into a slide with a screw, so that they can be raised to any height. These are raised, according to the weather, every morning, to let off the foul air. Each pen has a ventilator besides the trap door at the bottom, same size, which communicates with the pens and runs. These lower ventilators are used only in very hot weather, to allow a free circulation through the building, and in summer each pen is shaded from the extreme rays of the sun by thick shades fastened upon the inside, so that the inside of the house is cooler than the outside.

The dropping boards extend the whole width of the pen, and are about two feet wide and sixteen inches from the floor; the roosts are about seven inches above and over this board. They are three inches wide and crescent-shaped on top, so that the fowls can rest a considerable portion of their bodies on the perches. Under these dropping boards are the nest boxes, where the fowls lay, and are shaded and secluded. The feeding and drink-

ing troughs are made of galvanized iron, and hung with hooks on eyes, so that they can be easily removed when they require cleaning.

One can stand at one end of this long house and see all the chickens on their roosts. By seeing each other in this way the fowls are made companionable and are saved many a ferocious fight; at the same time each kind is kept separate from the other. Each pen has a run 33 by 12 and 15 feet; these runs are separated by wire fences 12 feet high, with meshes of 2 inches.

The house is surrounded with a drain which carries off all the moisture and water, and prevents dampness. Inside the house is cemented all through, and these cemented floors are covered with gravel two inches deep. The house is heated in the cold weather just enough to keep water from freezing. The plan of this hennery is remarkable for its simplicity and hygienic arrangement. The cost of the labor and material is under $500.



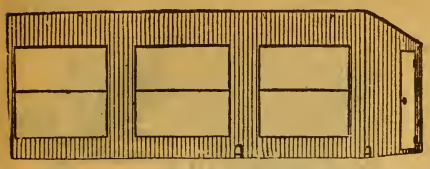
MOVABLE POULTRY HOUSE.

Movable Poultry House.—Those who have tried movable poultry houses regard them as exceedingly profitable arrangements, and very desirable

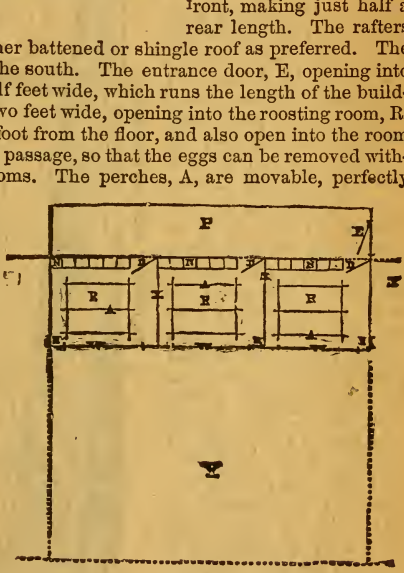
We give an illustration of one in use in England, which is mounted on wheels, with a floor raised high enough above ground to form a dry run. It has a set of movable laying nests at back, outside flap-door with lock, large door with lock, for attendant, small sliding door and ladder for fowls, two shifting perches,

and sliding window. The benefit birds of all description derive from change of place, not only arises from the pleasure every animal as well as man derives from changes of scene, but by being preserved from the exhalations emitted by excrementitious matter and decaying food.

Model Poultry House.—We give a plan of poultry house and yards, combining many good points and conveniences. The building is enclosed with worked spruce or pine boards, put on vertically, and the height so arranged that each board will cut to avoid waste. All the pieces are cut off of the full lengths in front, making just half a rear length. The rafters of thirteen feet joist, with either battened or shingle roof as preferred. The building is supposed to face the south. The entrance door, E, opening into the passage, P, three and a half feet wide, which runs the length of the building; smaller doors, D, each two feet wide, opening into the roosting room, R. The nests are raised about a foot from the floor, and also open into the room R, with a hinged board in the passage, so that the eggs can be removed without entering the roosting rooms. The perches, A, are movable, perfectly level, and raised two feet from the floor. The partition walls are tight, two boards high, above which is lath; the passage wall above the nest, and also the doors, D, being of lath also.



ELEVATION.—LENGTH, 24 FEET; WIDTH, 11 FEET; HEIGHT, IN FRONT, 9 1-2 FEET; HEIGHT, IN REAR, 6 1-2 FEET.

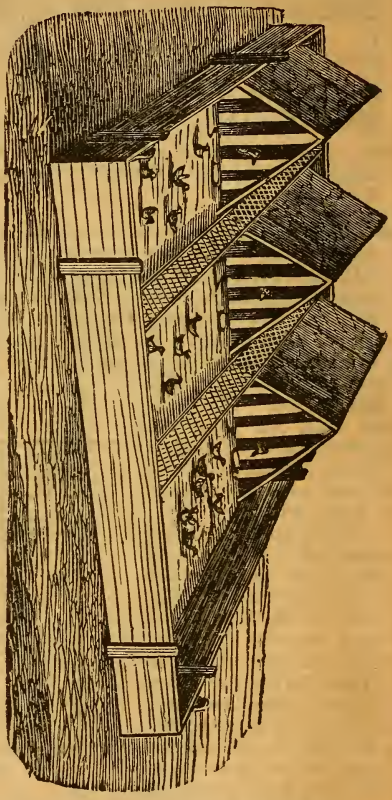


PLAN AND YARD.

The roosting-rooms are seven and a half by eight feet, large enough for twenty-five fowls each. Windows are six feet square, raised one foot from the floor. We prefer the glass to be six by eight or seven by nine inches—as these small sizes need no protection strips to prevent the fowls from breaking them. The holes, H, for egress and ingress of the fowls, are closed by a *drop* door worked by a cord and pulley from the passage way. Another door can be placed in the other end of the passage way if desirable. This arrangement of the yards, Y, of course would not suit every one; some would prefer smaller yards, making each yard the width of the room and adding to its height. The house above is designed for only three varieties; but by simply adding to the length, any number of breeds may be accommodated. The simplest and most economical foundation is to set locust or oak posts about four feet deep, every eight feet, and

spike the sills on them. There is then no heaving from frost; and all the underpinning necessary is a board nailed to the sill and extending into the ground a couple of inches. A setting room can be added by making the building four feet longer. The room should be in the end next the door, so as to be always within notice.

Such a house built of seasoned lumber and well battened, will shelter any fowls—except, perhaps, the Spanish, Leghorns, and a few of the more tender varieties—from all ordinarily cold weather; and we believe it to be the cheapest and most convenient house for general use.



CHICKEN AND DUCK INCLOSURE.

Chicken and Duck Inclosure.—We present herewith a plan for chicken or duck coops, with inclosures, which will be found very convenient fixtures in any poultry-yard. These coops are made so that they are movable, and can be constructed by almost any one conversant with the use of a hammer and nails. Any refuse boards and odd pieces are all that are necessary to build them. The coops can be set in any desired position, then fenced in with boards twelve to sixteen inches wide, as shown in our engraving, with stakes driven in the ground on each side of the boards at intervals, to keep them from falling over. Put up in this manner the stakes can be withdrawn at will and the inclosure moved as often as desirable. For partitions our engraving has shown a light wire mesh, which is easy to handle and can be procured at a very small cost. This is fastened into position by pinning down with wooden pins, which, in this way, is made also movable.

Caponizing.—Caponizing is not a very difficult operation, and any one who is blessed with the average amount of brains and common sense can soon learn to caponize as quickly and as successfully as an "expert." We know that some one will probably tell you that the instruments used are "very delicate," and the operation can only be safely performed by an ex-

pert; but don't believe it. We once wrote out the directions for caponizing, and sent them to a lady who was anxious to know how to perform the operation. With the written directions before her, she first operated on some half-dozen of cockerels that had been killed for table use, and then tried her hand on the living birds, with excellent success. In three days, besides doing her usual housework, she caponized 162 cockerels, and only three of them died from the effects of the operation.

If you live near any one who understands caponizing, and is willing to teach others, go and learn how, but if you cannot do that, go and get a set of instruments and teach yourself. A set of caponizing instruments consists of a pointed hook, a steel splint with a broad, flat hook at each end, a pair of tweezers, and a pair of crooked concave forceps. In the first place, kill a young cockerel and examine it carefully, so that you will be able to tell the exact position of the organs to be removed. You will find them within the cavity of the abdomen, attached to the back, one on each side of the spine. They are light colored, and the size varies with the age and breed.

After you have "located" the parts to be removed, practice the operation on chickens that have been killed, until you are sure that you can operate quickly and safely; then you may try your hand on the living birds. Place the bird on its left side in a rack that will hold it firmly in position without injuring it, or else draw the wings back and fasten them with a broad strip of cloth; draw the legs back and tie them with another strip; then let the attendant hold the fowl firmly on the table, one hand on the wings and head, the other on the legs, while you perform the operation. Remove the feathers from a spot a little larger than a silver dollar, at the point near the hip, upon the line between the thigh and shoulder. Draw the skin backward, hold it firm while you make a clean cut an inch and a half long between the last two ribs, and lastly through the thin membrane that lines the abdominal cavity. In making the last cut, take care and not injure the intestines. Now take the splint and separate the ribs by attaching one of the hooks to each rib, and then allowing the splint to spread; push the intestines away with a teaspoon handle, find the testicles; take hold of the membrane that covers them and hold it with the tweezers; tear it open with the hook; grasp the spermatic cord with the tweezers, and then twist off the testicle with the forceps. Remove the other in the same way. The left testicle is usually a little farther back than that on the right, and should be removed first. During the operation take care not to injure the intestines, or rupture the large blood vessels attached to the organs removed. The operation completed, take out the splint, allow the skin to resume its place, stick on some of the feathers that were removed, which will absorb the blood and cover the wound; give plenty of drink, but feed sparingly on soft cooked food for a few days, or until they begin to move around pretty lively.

To prepare cockerels for caponizing, shut them up without food or drink for twenty-four hours previous to the operation, for if the intestines are full the operation will be more difficult and dangerous. Cockerels that are intended for capons should be operated upon between three and four months of age. Cockerels of any breed may be caponized, but of course the larger breeds are the best. A cross between the Light Brahmas and Partridge Cochins will produce extra large cockerels for capons, but only the first cross is desirable. Capons grow fully one-third larger than the ordinary male fowl of the same age and breed. Their flesh is more delicate and juicy, and they command prices, from thirty to fifty per cent. higher than common poultry, but outside the largest cities there is no market for them.

Good and Cheap Incubators.—For the benefit of those who desire to experience some of the pleasures and profits of artificial incubation, we here give a model of a very simple and reliable incubator, with directions for making the same.

Have a pine case made somewhat like a common washstand (see Fig. 2) without the inside divisions.

About a foot from the floor of this case, place brackets like those in Fig. 1, and on a level with these screw a strong cleat across the back of the case inside. These are to support the tank.

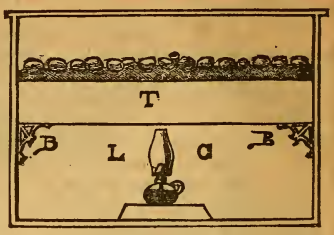


FIG. 1.—INSIDE OF INCUBATOR. FRONT SECTION—T, TANK; L C, LAMP CLOSET, B B, BRACKETS.

The tank should be made of galvanized iron, three inches deep and otherwise proportioned to fit exactly within the case and rest upon the brackets and cleat. The tank should have a top or cover soldered on when it is made. At the top of this tank in the center should be a hole an inch in diameter with a rim two inches high, and at the bottom, toward one end, a faucet for drawing off the water. When the tank is set in the case fill up all the chinks and cracks between the edges of the tank and the case with plaster Paris to keep all fumes of the lamp from the eggs.

Fill the tank at least two inches deep with boiling water.

To find when the right depth is required, gauge the water with a small stick. Over the top of the tank spread fine gravel a quarter of an inch thick; over this lay a coarse cotton cloth. Place the eggs on the cloth, and set a kerosene safety-lamp under the center of the tank.

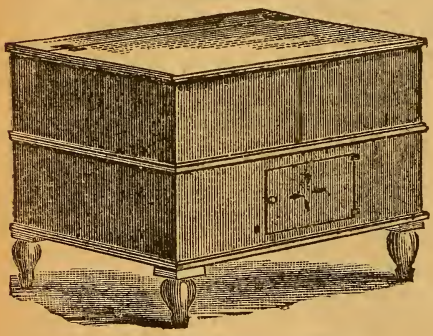


FIG. 2.—INCUBATOR CLOSED.

The door of the lamp-closet must have four holes for ventilation, otherwise the lamp will not burn. The lamp-closet is the space within the incubator under the tank. Turn the eggs carefully every morning and evening, and after turning sprinkle them with quite warm water. Two thermometers should be kept in the incubator, one half way between the center and each end; the average heat should be 105 degrees.

If the eggs do not warm up well, lay a piece of coarse carpet over them. If they are too warm, take out the lamp and open the cover for a few minutes, but do not let the eggs get chilled. If they should happen to get down to 98 degrees, and up to a 108 degrees, you need not think the eggs are spoiled. They will stand such a variation once in a while; but of course a uniform temperature of 105 degrees will secure more chickens, and they will

be stronger and more lively. In just such an incubator as the one described, the writer hatched over two hundred chickens two years ago.

For those who are ambitious to try top heat, the same sort of a tank is required, but a boiler must be attached at the side with an upper and lower pipe for circulation. Any plumber can attach the boiler, and the faucet must be at the bottom of the boiler on one side.

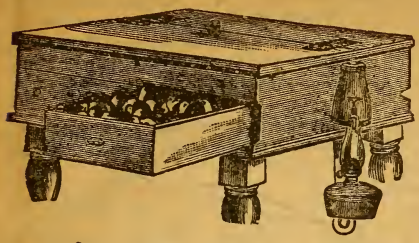


FIG. 3.—TOP HEAT INCUBATOR, ON TABLE.

The drawers containing the eggs should slide beneath the tank. A stand for the lamp should be screwed to one end of the case in such a position as to bring the lamp under the boiler (see illustration above). This incubator can be cooled by raising the lid, turning down the lamp and pulling the drawers part way out.

In both incubators while the eggs are hatching sprinkle them two or three times with quite warm water. After the chicks are hatched they need a warm cover, a good run, plenty of clean gravel, fresh water, fine cracked corn, and green food every day.

FIG. 4.—FORM OF TANK.

How to Raise Artificially-Hatched Chickens.—The following article is from the pen of a gentleman who has given the matter of the artificial hatching of chickens much careful study, and he tells how to successfully raise the young chicks after being so hatched:

"It is evident to the most casual observer that chickens hatched without a mother must be raised without a mother. Born orphans, they must remain orphans. When my incubator produced the first chick, what a commotion there was in the house. The birth of a baby wouldn't have been a circumstance to it; and while the women-folks would have known what to do with a new baby, we all looked at one another with blank bewilderment when the question was asked what we should do with the new chick. The thermometer outside was down nearly to the freezing point, while in the incubator the temperature was 105 degrees. The little chick's hair stood on end, and he was panting for dear life. He must come out of there, and as his brothers and sisters were following him out of the shells, we began to prepare all sorts of receptacles for them. We rigged up a mother on the heater, and put in it several chicks that lived a few hours and then died. We decided it was too cold, so we put others in a box and put them back in the

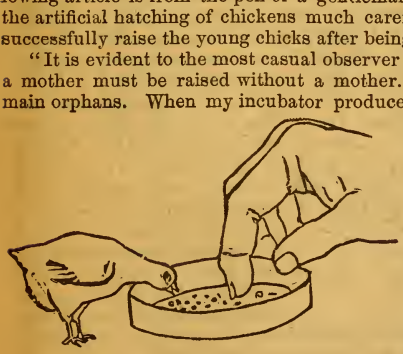


FIG. 1.

incubator, where some of them were smothered with the heat. It was evident something must be done, or we would soon have no chicks to experiment with. I determined in my own mind that a temperature of about ninety degrees would be correct, so I rigged up the brooder and started the lamp, put in the thermometer, and when the proper degree of heat was reached, put what was left of the chicks into the brooder, and they began to brighten up. The problem was solved, though its solution cost me the lives of many fine chicks.

"With further experience, I find the following treatment a complete success: After the chick breaks the shell, let him scramble around and dry himself in the incubator, which will generally take a few hours, though some are much stronger than others. After too much exercise they begin to pant, and should, of course, be removed. I have a box twelve inches square and six inches high. To the lid of this tack strips of woolen cloth an inch wide and two inches apart. These rags should hang within two inches of the bottom. Put a half inch of dry sand in the box. The brooder is kept at a temperature between eighty and ninety degrees. The young chicks, when perfectly dry, are taken from the oven and put in the box, and the box put in the brooder where the other chicks are. Air holes should be cut in the *lid* of the box, for if cut in the side the other chicks peck out the feathers of the little ones through these holes. This box keeps the chicks warm, and they soon brighten up, and at the end of twelve hours are ready to take the first lesson in eating. Take a hard boiled egg and chop the white and yelk up together as fine as grains of wheat; with it cover the bottom of a little pan —the top of a blacking box will do. Place this in the box with the chicks, and, while tapping with the finger in the feed, repeat 'tuck, tuck,' like the clucking of a hen (Fig. 1). A little patience, and one chick will see something and peck at it, when the others will follow suit, and in a few minutes the first lesson is learned. After a few meals, with this process repeated, it will be only necessary to rap on the box, and the little fellows will be ready for their meal, and also be spry enough to be put out of the box and run with the others in the brooder.

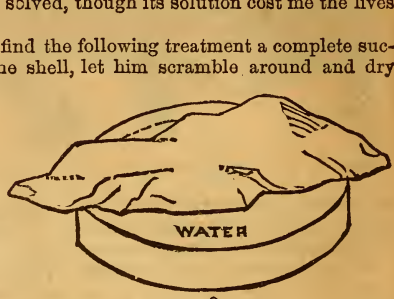


FIG. 2.

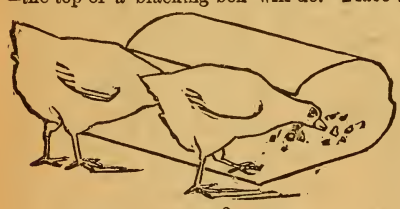


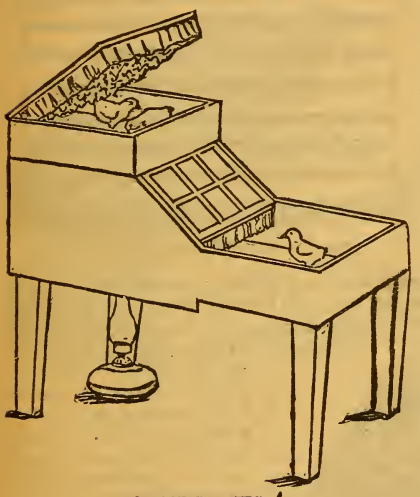
FIG. 3.

"The next lot of chicks I feed as follows: Stale wheat bread is soaked in water. A cupful of oatmeal or rice has boiling water poured over it, and is stirred until it takes up all the water. I mix two handfuls of soaked bread, with the water squeezed out, with one handful of this oatmeal, and dry it all with unbolted cornmeal until it crumbles freely. A little salt is mixed up with it. This, with a little meat once a day, is their sole feed, and it is given about every three hours until the chicks are a week old, or until the wings

are large enough to cover their backs, when they are put in a pen. This lot is fed the above mixture five or six times, with meat or worms once a day, and a head of cabbage is hung in the pen for them to peck at. The bottom of this pen is covered with dry sand and ashes, with a pile of old mortar and broken oyster shells to be picked over.

"For a water fountain I use a small tin pan, covering with a stone all the top except just enough to allow the chicks to drink, as shown at Fig. 2. Turn the open part next to the wall, so the little things cannot scratch dirt into it. Chicks are very fond of scratching the feed out of the pan. To prevent this I take a sheet of tin (Fig. 3), bend it over, and put the feed under the bent part. This prevents their treading on or scratching out the feed, and caters to their natural taste for hunting under things for food. It is also cleaned more readily than a pan.

"The body of the brooder (Fig. 4) is made of zinc, with an air-chamber over and under the back end. The lamp setting under it sends the heat up through the heater and out through the top, where a nursery for young or sick chicks is placed to utilize the waste heat. This form of brooder, with a warm chamber and the chicks feeding in the open air, I believe to be better than those where the chicks are never subjected to a cool atmosphere. The short stay while they feed in the open air tends to harden and invigorate them. All brooders, boxes, or pens, used to keep large numbers of chicks in, should have the bottom lined with zinc, as wood or earth is sure in time to become saturated with excrement, no matter how clean you try to keep it, and it is the ammonia arising from these tainted floors that causes such pens in time to prove fatal to the chicks. I promised to tell the truth about my experience in hatching the eggs, and here it is: The last eggs that hatched out were bought October 10th. Up to that time I had purchased one hundred and five eggs at thirty cents a dozen. About one-third of these proved unfertile, and were cooked and eaten, or hard-boiled and fed to the young chicks, leaving about seventy-five eggs for the incubator to work on. Out of these I now have twenty-seven as fine chicks as I ever saw. By my own awkwardness and want of experience, I have killed or lost fully one dozen. My machine was an old one, and the battery was worn out. The gauge never was worth a cent. All the defective parts have been renewed except the gauge, and I have learned to doctor that. Owing to the above faults, the temperature in the oven has run too low for days at a time, and for hours it has been at 82 degrees, while it has



BROODER.—FIG. 4.

taken short trips as high as 110 degrees. The only wonder is that I got a chicken out of any of the eggs. It is astonishing how much an egg will stand.

"From my experience with hens I am satisfied I will be able to get more chicks from a given number of eggs with the incubator than I ever could with hens. It would be a poor hand who could not raise from a fourth to a third more chicks with brooders than with the best hens."

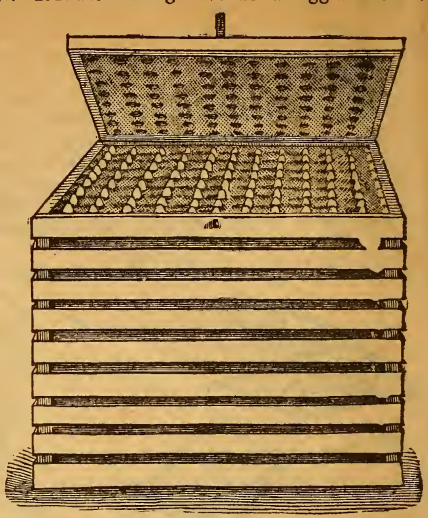


FIG. 1.—CANVAS COVERED CASE.

Packing Eggs for Market.—We present herewith three different styles or methods of packing eggs for shipment or for storage, any one of which will be found simple, inexpensive and practical.

Our illustration, Fig. 1, represents a substantial carrying case, with nine drawers, the frames of which are of wood covered with canvas or sacking, with cords or strings underneath, for the purpose of keeping the eggs in their places. The sacks, at the top and bottom, have depressions, as shown in the cover of the engraving, so that the eggs fit snugly and are not liable to be displaced by handling or transporting. Each alternating layer, coming between these depressions in each box or drawer, fills up the interstices perfectly. With proper care these cases will last for years, are always ready for packing and can be filled as the eggs are laid, thus avoiding repeated handling. The eggs can also be kept in them perfectly secure when the owner desires to hold his stock for better market. There are nine layers or drawers of eggs in this box,

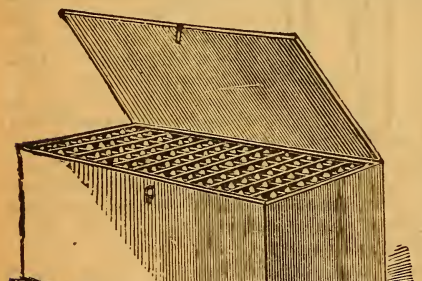


FIG. 2.—COMMON TRANSPORTING CASE.

each layer containing eight dozen, or a total of seventy-two dozen of eggs.

Fig. 2. shows a cheaper case in every respect. It is a common packing box, made with paste or binders' board partitions, and each layer of eggs is

covered with the same material. One point connected with packing in these boxes the shipper should know and guard against; that is, it is sometimes the case that the pasteboard cover, on which the eggs are placed, is composed of two pieces, and during transporting or handling these pieces become displaced, or pass each other; then the eggs above drop down on the lower ones and break them. This difficulty, however, can easily be avoided by passing a piece of stiff paper over the joints, which will prevent them passing each other. Any sized box desired can be used for this style of case, and, with a little care on the part of the packer of the eggs, can be carried as safely as with any of the patent boxes now in vague.

Fig. 3 consists of an outside case or crate, in which are fitted a number of trays with cord laced through the sides and ends, dividing the spaces into small squares or meshes, and making a delicate spring, which responds to the slightest jar. Rows of pockets are suspended from the cord work, giving to each a separate apartment, and so arranged that no jar nor jolt the carrier may receive can cause one egg to strike another, and being thus separated, a free circulation of air is obtained, which prevents heating by any possibility. Each tray is provided with a protector, which keeps the eggs in the pocket even though the carrier be overturned. As each tray contains a certain number, no errors in count can ever occur, and the purchaser can determine at a glance both the number and quality of the eggs. By using this carrier a child can pack as well as a man. One of these carriers, the size shown, will hold sixty dozen of eggs.

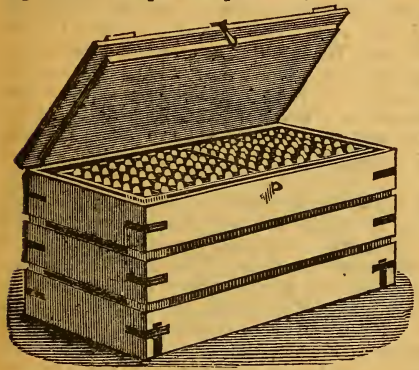


FIG. 3.—SUSPENSION EGG CARRIER.

Milk for Hens.—Fanny Field thus expresses herself as to the food value of milk for hens: "I quite agree with the correspondent of the *American Poultry Yard*, who declares there is no feed on earth so good for fowls and chicks as milk in some form. For very young chicks we make the clabbered milk into Dutch cheese, and use the whey to mix feed for other fowls and chickens. From the time they are a week old till sent to market for broilers, our early chicks have all the milk, sweet or sour, or buttermilk, that they can drink. If the home supply of milk falls short of the demand, we buy skim milk at two cents a quart, and consider it cheap at that. For laying hens in winter there is nothing better than a liberal supply of milk. A pan of warm milk, with a dash of pepper in it, every morning, will do more toward inducing hens to lay in cold weather than all the egg-food in creation. For fattening fowls, we find that boiled vegetables mixed with milk and barley or cornmeal will put on flesh at an astonishing rate. Don't be afraid to give milk to fowls or chicks; from the time when the chicks are given the first feed up to within the last day of the old fowl's life, milk may be safely and profitably given."

Poultry Keeping for Profit.—During the year 1884, Mr. Henry Stewart contributed to the *New York Times* a series of articles containing many valuable suggestions for those who wish to make poultry-keeping a business. His plan is briefly as follows: Each yard is to consist of a plot of ground about 100x400 feet, containing nearly one acre, with a suitable fence. The house is placed in the center of the yard and a cross-fence on a line with the house divides it into two parts. These two parts are alternately sown thickly with some crop that will afford forage for the fowls. In September they are placed on one side sown thickly with turnips. The other is immediately plowed up and sown with rye. The fowls will do very well for the winter in one side, with an occasional day in the green rye. In November wheat is sown, after the turnips are eaten off. In April we may sow oats, in May corn, in June rape or mustard seed and in July begin the rotation again with rutabagas.

As a rule a house twenty-five feet long, ten feet wide, eight feet high in the front and five feet in the rear, will be quite large enough for the one hundred fowls to be kept in each yard. This should be cleaned at least once a week, the oftener the better. The inside walls are quite smooth, having no fixtures except the roosting poles, which are on a level one foot from the ground. This leaves no harbor for vermin. The nests are loose boxes. Mr. Stewart also suggests that where a series of yards are kept, the inside fences may be movable, so that while the fowls are all confined to one side, the fences may be removed from the other, thus facilitating the plowing and planting.

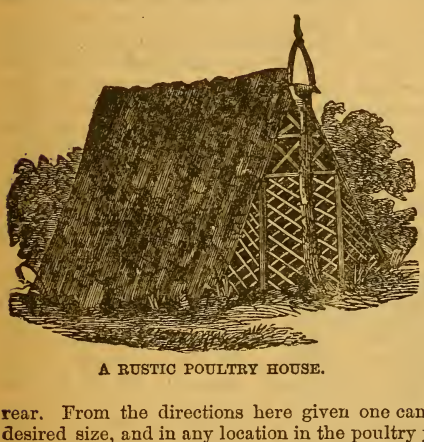
"It is evident," he adds, "that this system will greatly enrich the soil, and this may be turned to good account by raising fruit trees in the poultry yards. No other fruit crop pays so well as plums, but none is so hard to grow on account of the pestiferous curculio. But when plums are grown in a poultry yard this insect has no chance. The sharp eyes of the fowls let no rogue escape, and one can raise plums with success and profit. As 200 of these trees can be planted on one acre, there is a possibility of $400 per acre from the fruit as well as $200 from the fowls; for every hen well cared for should make a clear profit of two dollars in the year. The yards may be planted with dwarf pear trees, with equal profit or more, because 300 of them may be placed on one acre. The shade of these trees is invaluable." It is also recommended that a row or small grove of Norway Spruce, Arbor-vitæ or Austrian pine be planted each side of the house to serve as a wind break for the fowls in winter.

Raising Chickens by Artificial Mothers.—Mr. E. S. Renwick writes from a large experience upon the above subject, in the *American Agriculturist*. He says:

When a fancier raises forty or fifty chickens a year, as amusement, the amount of care which he gives them is never taken into account; but if the number of chickens be increased to several hundreds, some means must be provided by which so large a number can be taken care of without too much labor. For supplying warmth and protection to young chickens, various "artificial mothers," or "brooders," have been devised. Those in the market are well enough adapted to the raising of a small number of chickens of nearly the same age, but it becomes a difficult matter when from two hundred and fifty to five hundred are to be raised, and of all ages, from those just hatched to those large enough for broilers. Young chickens must have plenty of air, exercise and wholesome green food; and means of protection

against injury must be provided. Where young chickens of different ages are together, the elder tyrannize over the younger, the newly-hatched chickens being frequently trampled to death, or are driven away from their food by the stronger. Young chickens are very often lost in the grass when at liberty, and are frequently wet and chilled. Hence, to successfully raise a large number of chickens by hand, various means must be provided by which those of different ages can be separated, and by which the chickens can be protected and at the same time have sufficient liberty for exercise and development in the open air.

A Rustic Poultry House.—The rustic poultry house here illustrated is not only convenient, but designed to beautify the poultry yard of any amateur or breeder. For the rustic work, join four pieces of sapling in an oblong shape for sills; confine them to the ground; erect at the middle of each of the two ends a forked post, of suitable height, in order to make the sides quite steep; join these with a ridge pole; put on any rough or old boards from the apex down to the ground; then cover it with bark, cut in rough pieces, from half to a foot square, laid on and confined in the same manner as ordinary shingles; fix the back end in the same way; and the front can be latticed with little poles, with the bark on, arranged diamond fashion, as shown in the engraving. The door can be made in any style of rustic form. The roosts, laying and setting boxes can be placed inside of the house, in almost any position, either lengthwise or in the rear. From the directions here given one can easily build a house of any desired size, and in any location in the poultry yard he wishes; but to make the rusticity of the house show off to the best advantage it should be placed amid shrubbery.



A RUSTIC POULTRY HOUSE.

The Hatching Period.—Setting hens should have a daily run. Do not remove them forcibly from their nests, but let the door be open every day at a given hour for a certain time while the attendant is about. Perhaps for the first day or two you may have to take them gently off their nests, and deposit them on the ground outside the door. They will soon, however, learn the habit and come out when the door is open, eat, drink, have a dust-bath and return to their nests.

While hens are off their nests some people dampen the eggs with lukewarm water. It is claimed that moisture is necessary, and that the chicks gain strength by the process. This may be correct, and in very dry weather, perhaps, necessary. It is generally, however, a mistake to meddle too much with nest or eggs; the hen is only made restless and dissatisfied by so doing. While the eggs are hatching out it is best not to touch the nests. It is very

foolish to fuss the old bird and make her angry, as she may tread on the eggs in her fury, and crush the chicks when they are in the most delicate stage of hatching.

Picking off the shell to help the imprisoned chick is always a more or less hazardous proceeding, and should never be had recourse to unless the egg has been what is termed "billed" for a long time, in which case the chick is probably a weakly one and may need a little help, which must be given with the greatest caution, in order that the tender membranes of the skin shall not be lacerated. A little help should be given at a time, every two or three hours; but if any blood is perceived stop at once, as it is a proof that the chick is not quite ready to be liberated. If, on the contrary, the minute blood vessels which are spread all over the interior of the shell are bloodless, then you may be sure the chick is in some way stuck to the shell by its feathers, or is too weakly to get out of its prison-house.

The old egg shells should be removed from under the hen, but do not take away her chicks from her one by one as they hatch out, as is very often advised, for it only makes her very uneasy, and the natural warmth of her body is far better for them at that early stage than artificial heat. Should only a few chicks have been hatched out of the sitting, and the other remaining eggs show no signs of life when examined, no sounds of the little birds inside, then the water test should be tried. Get a basin of warm water, not really hot, and put those eggs about which you do not feel certain into it. If they contain chicks they will float on the top, if they move or dance the chicks are alive, but if they float without movement the inmates will most likely be dead. If they (the eggs) are rotten they will sink to the bottom. Put the floating ones back under the hen, and if, on carefully breaking the others, you find the test is correct (one puncture will be sufficient to tell you this), bury them at once.

Chickens should never be set free from their shells in a hurry, because it is necessary for their well-being that they should have taken in all the yelk, for that serves them as food for twenty-four hours after they see the light, so no apprehension need be felt if they do not eat during that period, if they seem quite strong, gain their feet, and their little downy plumage spreads out and dries properly. Their best place is under the hen for the time named.

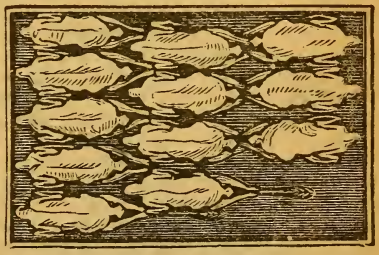
When all are hatched, cleanse the nest completely, and well dredge the hen's body with sulphur powder; give her the chicks, and place chopped egg and bread-crumbs within reach. The less they are disturbed during the first two or three days the better. Warmth is essential, and a constantly brooding hen is a better mother than one which fusses the infant chicks about and keeps calling them to feed. Pen the hen in a coop and let the chicks have free egress. The best place to stand the coops is under sheltered runs, guarded from cold winds, the ground dry, and deep in sand and mortar siftings. Further warmth is unnecessary if the mothers are good; and if the roof is of glass, so as to secure every ray of sun, so much the better. Cleanliness of coops, beds, flooring, water vessels and flood tins must be absolute. The oftener the chicks are fed the better, but food must never be left; water must be made safe, or death from drowning and chills may be expected. The moment weather permits, free range on grass for several hours daily is desirable, but shelter should always be at hand.

Packing Poultry for Market.—All poultry should be thoroughly cooled and dried before packing, preparatory for shipment to market. For

packing the fowl provide boxes, as they are greatly preferable to barrels. Commence your packing by placing a layer of rye straw, that has been thoroughly cleaned from dust, on the bottom of the box. Bend the head of the first fowl under it, as shown in our illustration (Fig. 1), and then lay it in the left hand corner, with the head against the end of the box, with the back up. Continue to fill this row in the same manner until completed; then begin the second row the same way, letting the head of the bird pass up between the rump of the two adjoining ones, which will make it complete and solid (see illustration, Fig. 2). In packing the last row, reverse the order, placing the head against the end of the box, letting the feet pass under each other. Lastly, fill tight with straw, so that the poultry cannot move. This gives a firmness in packing that will prevent moving during transportation. Care should be taken to have the box filled full.

PACKING POULTRY.—FIG. 1.

Poultry Raising as a Business.—Mr. P. H. Jacobs, a practical poultry man, writes as follows in the *American Agriculturist:* A flock of ten hens can be comfortably kept in a yard twenty feet wide by fifty deep. An acre of ground will contain forty such yards, or four hundred hens. No cocks are necessary unless the eggs are desired for incubation. To estimate $1.50 as a clear profit for each hen, is not the maximum limit, but the profit accrues according to the management given. Poultry thrives best when running at large, but this applies only to small flocks. Hens kept by the hundred become too crowded while at large, no matter how wide the range, and sickness and loss occur. Large flocks must be divided, and the size of the yard required for a flock is of but little importance compared with that of the management. There is much profit to be derived from the sale of young chicks—and, where one pays attention to the business—they receive the greatest care. Each brood, like the adult, is kept separate from the others in a little coop, which prevents quarreling among the hens, and enables the manager to count and know all about the chicks. This is very important, as there are many farmers who hatch scores of broods and yet cannot tell what became of two-thirds of them. Hawks, crows, cats, rats, and other depredators take their choice, and the owners are no wiser. Each setting hen should be in a coop by herself, and each coop should have a lath run. The critical period is the forming of the feathers, which calls for frequent feeding, and when they have passed that stage, the chicks become hardy. The houses need not be more than eight feet square for each family, and can be doubled. If possible, it is best to have changeable yards, but, if used, a less number



PACKING POULTRY.—FIG. 2.

can be kept to an acre. If the yards are kept clean by an occasional spading, however, green stuff may be grown elsewhere and thrown over to them. This may consist of cabbage, grass, turnip tops, kale, mustard, lettuce, etc. Watering must not be neglected, or the meals given irregularly. Care must be observed not to feed too much, as over-fat fowls will lay few eggs, and such eggs will not hatch. A good poultry manager is always among his fowls, and observes everything. The breeds have special characteristics also. The large fowls must be hatched in March, if early pullets are desired for winter laying. This applies to Brahmas, Cochins and Plymouth Rocks. If the manager finds this impossible, he should at once substitute cocks of the Leghorn breed, which crossed with large hens, make good marketable chicks, and produce pullets that mature early. A knowledge of the characteristics of the several breeds is indispensable to success. Crossing pure-bred cocks with common hens is excellent, but "fancy poultry" is not profitable to any but those who understand thoroughly the mating and selection of the several breeds.

Poultry on a Large Scale.—People thinking of raising chickens on a large scale will do well to note the following sound advice by the *Poultry Monthly:*

"There are many persons of moderate means who have had perhaps some little experience with breeding poultry, and who get to wondering if it will pay to breed poultry on a large scale; whether it will pay to embark in the breeding of poultry for market purposes as a business, and if it is good policy to give up a fair paying clerkship or small business to engage in it. Such questions are very difficult to determine to the satisfaction of all persons concerned, for much more really depends on the person than on the business in nearly every department of human industry, and where one person may make a success of any undertaking another one may fail, though having started with equally as good chances of success. Poultry, to be successful on a large scale, must be kept in small colonies of about fifty birds each, for many more than that number in a single house is apt to cause sickness or disease, ere long, among them. Small flocks like that can be given better attention than larger ones, and the first approach of disorder can be seen readily and promptly checked, while there is less danger of great loss when thus kept in small flocks, as the trouble can usually be confined to the flock in which it started by proper and prompt sanitary measures. When the breeder is not too far away from large retail markets, and especially where the breeder can market them himself, thus saving commission, freight, and loss, it pays best to breed and keep poultry for the eggs they produce, as eggs known to be strictly fresh are always in good demand at quite an increase in price over that received for the ordinary "store" eggs. Such breeds as the white and the brown Leghorns, and birds bred from them, either pure breed or cross breed or grade, as a basis, are first-class egg producers, while a game cock is also valuable to breed to good common hens, producing, as a rule, vigorous, active pullets, which are invariably good layers. Those who wish to raise poultry principally for the flesh should raise the light Brahmas, Plymouth Rocks, dark Brahmas, or some of the Cochin breeds, the first two named, however, being general favorites in this respect, and also combining with it good laying qualities under favorable circumstances. Those who cannot or will not give the poultry regular or constant attention, shelter them properly, supply proper food in liberal quantities and at frequent and regular intervals, and pay a strict attention

to cleanliness and thoroughness in all the details of the management, need not expect even to succeed, not to even consider the question of loss or profits, for success and profit here means work, work, work."

Feeding Hoppers for Fowls.—We give herewith designs for two styles of feeding hoppers for fowls, deeming anything that has a tendency toward economy will be beneficial to the farmer as well as to the amateur breeder of fowls.

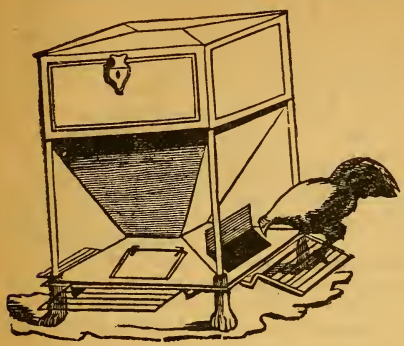


FIG. 1.—FEEDING HOPPER.

The illustration, Fig. 1, represents a very good and easily constructed hopper, that can be made to contain any quantity of corn required, and none wasted. When once filled it requires no more trouble, as the grain falls into the receiver below as the fowls pick it away, and the covers on that which are opened by the perches, and the cover on the top, protect the grain from rain, so that the fowls always get it quite dry; and as nothing less than the weight of a fowl on the perch can lift the cover on the lower receiver, rats and mice are excluded.

Our illustration, Fig. 2, represents "a perfect feeding hopper," which, from the description here given, can be easily constructed by any person. A is an end view, eight inches wide, two feet six inches high, and three feet long; B, the roof projecting over the perch on which the fowls stand while feeding; C, the lid of the receiving manger raised, exhibiting the grain; E, E, cords attached to the perch and lid of the manger or feeding trough; I, end bar of the perch, with a weight attached to the end to balance the lid, otherwise it would not close when the fowls leave the perch; H, pully; G, fulcrum. The hinges on the top show that it is to be raised when the hopper is to be replenished. When a fowl desires food it hops upon the bars of the perch, the weight of which raises the lid of the feed box, exposing the grain to view, and after satisfying its hunger jumps off, and the lid closes. Of course the dimensions of either of these feeding hoppers may be increased to any size desired,

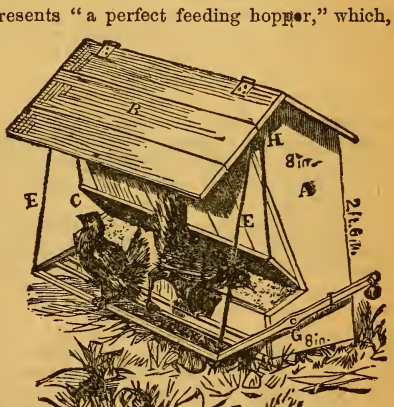


FIG. 2.—A PERFECT FEEDING HOPPER.

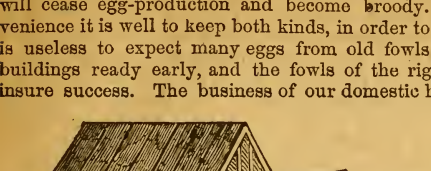
Winter Egg-Production.—The following is from the *Country Gentleman:* To obtain a breed of fowls that are perpetual layers is the object that many aim at. This is an impossibility, for nature will exhaust itself and must have a period of rest. In order that we have a perpetual production of fresh eggs, the business must be arranged beforehand. There is a difference in breeds, some laying better than others at any time of the year, and others, again, giving their eggs in winter. There is little difficulty in obtaining eggs in summer, but the winter eggs must be worked for, and the fowls managed beforehand. Hens that have laid well during the summer cannot be depended on for late fall or early winter, even if well fed, but will generally commence in January, and keep it up throughout February and March, giving a good supply of eggs if not too old. But it is better not to allow such birds to go into the winter. They are generally fat, after having finished the annual moult, and should be killed for the table. After the second annual moult hens are apt to become egg-bound, especially if well fed and fat. The excess of fat that accumulates about the lower intestines and ovaries weakens these organs and renders them incapable of performing their offices. Hence the fowl suffers and becomes profitless. When left too long the bird becomes feverish and the flesh is unfit for food. The better way is to avoid this trouble, since there is no cure, by not allowing the birds to go into the second winter. Trouble of this kind seldom occurs with pullets or young hens.

To obtain a supply of winter eggs, we must have the chicks out in March or April. Leghorns and some of the smaller breeds will do in May or the first of June, but the Brahmas and Cochins must come off early, that they may have the full season for growth. The Asiastics are generally good layers in winter, and need less artificial heat, as nature has not furnished them with any ornamental appendages which suffer by exposure to frost. For them it is not necessary to spend large sums in warm buildings. What they can dispense with in this respect they demand in feed, which must be given regularly. The feed must be kept up and varied with animal and vegetable diet. The supply of water must never fail. We must feed and feed a long time before the eggs will come. Any breed of hens will consume an enormous quantity of feed before commencing to lay, but after having once begun they will not require, or even take so much grain. When laying, their great craving is for vegetable and animal substances, and crushed clam or oyster shells.

Fowls that are regularly trained have certain portions of the day for their different feeds. My birds require their shells at night, as well as their greens, and their grain in the morning, and always fresh water. When one has the time and convenience, and enjoys the petting of fowls, making warm stews on very cold days is an admirable plan, and the birds relish them marvelously. Take beef or pork scraps, and put into an old kettle, having them previously chopped fine, and fill it half full of water. While stewing, throw in a dozen chopped onions, two dozen cayenne peppers, and the day's coffee and tea-grounds. Thicken the mixture with cornmeal, and serve it around among the hens hot. They relish it amazingly when once taught to eat it, and will look for the ration daily at the certain time. On cold winter days give this feed between two and three o'clock in the afternoon, and the chicks get their crops warmed up for the coming cold at night. If scraps are not handy, boil unpeeled potatoes, and serve in the same manner, adding a little grease or cold gravies left over from yesterday's dinner.

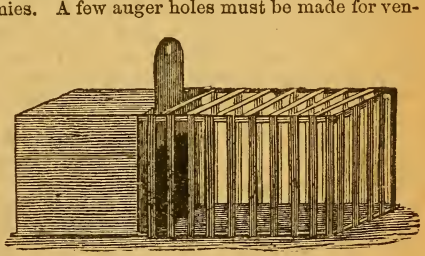
The combed varieties require warmer quarters and sunnier exposure

than the ...gs, and are good winter layers after December and early January. They will lay in the fall if early hatched, but the change of fall to winter, and the getting into winter quarters affects them, and they seldom commence again before the days begin to lengthen, at which time Brahmas will cease egg-production and become broody. Where one has the convenience it is well to keep both kinds, in order to insure a supply of eggs. It is useless to expect many eggs from old fowls of any variety. Have the buildings ready early, and the fowls of the right age and in condition to insure success. The business of our domestic hen is to produce eggs, and we must feed her for it.



CHICKEN COOP.—FIG. 1.

A Chicken Coop.—Nail short pieces of matched boards together as indicated in the cut; then board up the rear end tightly, and nail narrow strips of boards or lath in front; put a floor of boards in the back part of the coop, large enough for the hen to brood her young upon, and lay a wide board in front to feed upon, as long as the width of the coop. The coop should be at least two feet high, and from two to three feet deep. The board in front may be turned up at night to prevent the young against rats, cats, etc., and should remain in the morning until the dew is off from the grass The coop should be moved every two or three days to a clean place. The second engraving shows a coop of another construction, the tight apartment at the end with a slide door to let down every evening, keeps the little inmates secure from all enemies. A few auger holes must be made for ventilation. The front is a simple frame, with lath attached at sufficient distances to allow the chickens to pass through. The top should be made separate, and attached to the side by leather hinges.



CHICKEN COOP.—FIG. 2.

Feeding and Laying.—The best of feed sometimes fails to induce the hens to lay. This is not because the fowls do not get enough, but because it is not the kind they desire. It may be feed consisting of everything that serves to satisfy the demand for egg material, and yet no eggs will be the result. There are several causes for these complaints, one of the principal being the fact that a plentiful supply of pure fresh water is not always within reach, and unless water is plentiful the fowls will not lay. Water being the principal substance in an egg, it cannot be limited. Unless the water can be procured for the egg the fowl cannot lay. And in cold weather it must be so situated as to be either protected from freezing or else have a little warm water added to it occasionally. Now this is a troublesome job in winter, but water will freeze on cold days, and consequently is

useless to the fowls when in a frozen condition. The feed, however, even when of the best quality, may not give satisfaction. In that case, when no eggs are being derived, change it entirely for three or four days. Give something entirely different in the morning from that previously given, even if inferior, but still give whole grains at night in cold weather, for then the fowls go on the roost early in the evening, and have to remain in the coops until daylight, which is nearly thirteen hours, and so long a period demands the solid food in order to keep them warm during the long cold nights. Whole corn and wheat is best for them then, but in the morning any kind of mixed soft food makes a good meal for a change. The changes can be made by using good clover hay, steeped in warm water, after being chopped fine, slightly sprinkled with meal, and fed warm, which will be very acceptable. A few onions chopped fine will also be highly relished. Parched ground oats or parched cracked corn is a splendid change of food for a few days from the ordinary routine of every day. It stimulates them if fed warm, and is a good corrective of bowel complaints, especially if some of the grains are parched till burned. The matter of feeding is to give variety, and if the food is of good quality also, a good supply of eggs may be expected at all times, but with good quarters and plenty of water the prospects will be better.

Successful Poultry Raising.—Mr. Charles Lyman, a successful raiser of poultry, writes as follows: In raising poultry or stock of any kind, it should be the aim of every one to keep it healthy and improve it. You can do it very easily by adopting some systematic rules. These may be summed up in brief, as follows:

1. Construct your house good and warm, so as to avoid damp floors, and afford a flood of sunlight. Sunshine is better than medicine.

2. Provide a dusting and scratching place where you can bury wheat and corn and thus induce the fowls to take the needful exercise.

3. Provide yourself with some good, healthy chickens, none to be over three or four years old, giving one cock to every twelve hens.

4. Give plenty of fresh air at all times, especially in summer.

5. Give plenty of fresh water daily, and never allow the fowls to go thirsty.

6. Feed them systematically two or three times a day; scatter the food so they can't eat too fast, or without proper exercise. Do not feed more than they will eat up clean, or they will get tired of that kind of feed.

7. Give them a variety of both dry and cooked feed; a mixture of cooked meat and vegetables is an excellent thing for their morning meal.

8. Give soft feed in the morning, and the whole grain at night, except a little wheat or cracked corn placed in the scratching places to give them exercise during the day.

9. Above all things keep the hen house clean and well ventilated.

10. Do not crowd too many in one house. If you do, look out for disease.

11. Use carbolic powder occasionally in the dusting bins to destroy lice.

12. Wash your roosts and bottom of laying nests, and whitewash once a week in summer, and once a month in winter.

13. Let the old and young have as large a range as possible—the larger the better.

14. Don't breed too many kinds of fowls at the same time, unless you are going into the business. Three or four will give you your hands full.

15. Introduce new blood into your stock every year or so, by either buying a cockerel or settings of eggs from some reliable breeder.

16. In buying birds or eggs, go to some reliable breeder who has his reputation at stake. You may have to pay a little more for birds, but you can depend on what you get. Culls are not cheap at any price.

17. Save the best birds for next year's breeding, and send the others to market. In shipping fancy poultry to market send it dressed.

Fish for Poultry.—In preparing fish for fowls, we prefer to chop them up raw, add a very little salt and pepper, and feed in small quantities in conjunction with grain and vegetables; but for young chicks it is advisable to boil before feeding, and simply open the fish down the line of the back bone, leaving to the chicks the rest of the task. This food shall be given to layers sparingly, or we may perceive a fishy smell about the eggs, especially if the fish is fed raw. All who can will do well to try this diet for their flocks, and note its effect on egg production. We have always marked a decided increase in the rate of laying following an allowance of fish fed in moderate quantities.

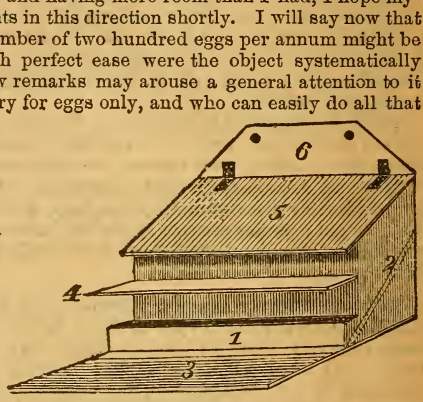
There are hundreds of our readers who live near or on rivers or lakes, or the sea shore, where they can get considerable offal fish, such as are either too small to market, or are cast out as unfit to be sold. Hundreds of bushels of these fish are annually used for manure, either composted or plowed in direct. In this connection they are very good, though many a basketful could be put to better account by feeding them to your fowls; and they are very fond of this diet, though care must be taken not to feed it exclusively, for it may cause extreme laxity.

To Cure Pip.—This is a troublesome and somewhat fatal complaint to which all domestic poultry are liable; it is also a very common one. Some writers say it is the result of cold; others, that is promoted by the use of bad water. But, whatever the cause, the disease is easily detected. There is a thickening of the membrane of the tongue, particularly at the tip; also a difficulty in breathing; the beak is frequently held open, the tongue dry, the feathers of the head ruffled and the bird falls off in food; and if neglected, dies. The mode of cure which, if put in practice in time, is generally successful, is to remove the thickened membrane from the tongue with the nails of the forefinger and thumb. The process is not difficult, for the membrane is not adhesive. Then take a lump of butter, mix into it some strong Scotch snuff, and put two or three large pills of this down the fowl's throat. Keep it from cold and damp, and it will soon recover. It may, perhaps, be necessary to repeat the snuff balls. Some writers recommend a mixture of butter, pepper, garlic, and scraped horseradish; but we believe the Scotch snuff to be the safest, as it is the most simple.

Eggs and Pullets.—Unless you want a large proportion of cockerels do not sell all the largest eggs you can pick out. There are no means known by which the sex of eggs can with certainty be determined. Although many thought some sign indicated the sex, yet after repeated fair trials, all these indications have entirely failed with me, except the one which follows: With regard to the eggs of most of the feathered kingdom, if you pick the largest out of the nest, they are the ones that generally produce males, especially if they happen to be the first laid. Even in a canary's nest it is noticeable that the first egg laid is very often the largest, the young from it is the first out, keeps ahead of its comrades, is the first to quit the nest, and the first to sing.

How to Produce Layers.—Mr. L. Wright says: In every lot of hens some will be better layers than others. Let us suppose we start with six Houdans—a cock and five hens. Probably out of this five two may lay thirty eggs per annum more than either of the others; their eggs should be noticed and only these set. By following this for a few years a very great increase in egg production may be attained. My attention was drawn to this subject by a friend having a Brahma pullet which laid nearly three hundred eggs in one twelve-month, though valueless as a fancy bird, and the quality descended to several of her progeny; and I have since found other instances which prove conclusively that a vast improvement might easily be effected in nearly all our breeds were that careful selection of brood stocks made for this purpose which the fancier bestows on other objects. It is to be regretted more is not done in this way, and having more room than I had, I hope myself to make some experiments in this direction shortly. I will say now that I am perfectly certain the number of two hundred eggs per annum might be attained in a few years with perfect ease were the object systematically sought; and I trust these few remarks may arouse a general attention to it among those who keep poultry for eggs only, and who can easily do all that is necessary without any knowledge whatever of fancy points, or any attempt to breed exhibition birds.

A Grain Chest for Fowls.—We illustrate an excellent grain chest for fowls. The trough (1), two inches high. The front of the chest extends downward no further than the top of the trough, thus leaving a free passage for grain from the chest into the trough. The dotted line (2) shows the position of a board in the chest, placed there to conduct the grain into the trough as fast as it is eaten out by the fowls. The platform (3) is for the fowls to stand upon while eating. It should not be wide enough to induce them to form a habit of sitting upon it. A board (4) is fastened to the front of the chest and extends over the trough to prevent filth from falling into it. The cover of the chest (5) should extend a little over the front, that it may be handily raised, and should rest inclined to prevent fowls from roosting on it. An extension of the back of the chest (6), with two holes in it, is provided so that it may be hung on corresponding wooden pins. If it is hung up in that way it will be necessary to put some kind of a key through each of the pins, to prevent its being jarred off from them. It should be hung so that the platform will be at least two feet from the floor. It may be made any length. A square chest, for a post in the yard, can be made on the same principle.



GRAIN CHEST FOR FOWLS.

How to Fatten Turkeys.—Nothing pays better to be sent to market in prime condition than the turkey crop. Many farmers do not understand this. Their turkeys grow on a limited range, getting little or no food at home through the summer, and if fed at all with regularity it is only for two or three weeks before killing. I see these lean, bony carcasses in the local

markets every winter, and feel sorry for the owner's loss. They have received a small price for their birds and a still poorer price for the food fed out. The average life of a turkey is only seven months, and the true economy of feeding is to give the chicks all they can digest from the shell to the slaughter. If they get all they can eat on the range, that is well. Usually this should be supplemented by regular rations when they come from the roost in the morning and two or three hours before they go to roost at night. The food may be slack in the morning, so that they will go to the range with good appetites, and fuller at night. They should be put upon a regular course of fattening food as early as the middle of October, when you propose to kill the best birds at Thanksgiving. The younger and lighter birds should be reserved for the Christmas and New Year's markets. They continue growing quite rapidly until midwinter, and you will be paid for the longer feeding. There is nothing better for fattening than old corn, fed partly in the kernel and partly in cooked meal mashed up with boiled potatoes. Feed three times a day, giving the warm meal in the morning, and feeding in troughs with plenty of room, so that all the flock may have a chance. Northern corn has more oil in it than Southern, and is worth more for turkey food. Use milk in fattening if you keep a dairy farm. Feed only so much as they will eat up clean. Cultivate the acquaintance of your turkeys as you feed them. No more charming sight greets your vision in the whole circle of a year than a large flock of bronze turkeys coming at call from their roosts on a frosty November morning. New corn is apt to make the bowels loose, and this should be guarded against. There is usually green food enough in the fields to meet their wants in the fall, and cabbage and turnips need not be added until winter sets in. If the bowels get loose give them scalded milk, which will generally correct the evil. Well-fattened and well-dressed turkeys will bring two or three cents a pound more than smaller birds. It will not only be better for the purse, but for your manhood, to send nothing but finished products to the market.

Preserving Eggs.—Several Practiced Methods.—Several ways of preserving eggs are practiced. The object is to prevent evaporation from the egg. Cutting off the air from the contents of the egg preserves them longer than with any other treatment. An egg which has lain in bran even for a few days will smell and taste musty. Packed in lime eggs will be stained. Covered with a coat of spirit varnish eggs have kept so perfectly that after the lapse of two years chickens were hatched from them. A good egg will sink in a body of water; if stale, a body of air inside the shell will frequently cause it to float. When boiled, a fresh egg will adhere to the shell, which will have a rough exterior; if stale, the outside will be smooth and glassy.

Looking through a paper tube directed toward the light, an egg held to the end of the tube will appear translucent if fresh; but if stale it will be dark—almost opaque.

Spirit varnish for preserving eggs is made by dissolving gum shellac in enough alcohol to make a thin varnish. Coat each egg with this and pack, little end down, so that they cannot move, in bran, sawdust, or sand; the sand is best. Whatever is used for packing should be clean and dry. For preserving in lime, a pickle is made of the best stone lime, fine, clean salt and water enough to make a strong brine, usually sixty or sixty-five gallons of water, six or eight quarts of salt, and a bushel of lime are used. The lime should be slacked with a portion of the water, the salt and the re-

mainder of the water is added. Stir at intervals, and when the pickle is cold and the sediment has settled, dip or draw the liquid off into the cask in which the eggs are to be preserved. When only a few eggs are to be pickled a stone jar will answer.

At the Birmingham Poultry Show, England, prizes were offered for the best dozen preserved eggs that had been kept two months. The eggs were tested by breaking one of each set competing for the prize into a clean saucer, also by boiling one of each lot.

The eggs that had been preserved in lime-water, it was found on breaking them, presented cloudy whites. Eggs preserved by rubbing over with bees-wax and oil showed thin, watery whites.

Eggs that stood best the test of boiling and which gained the first prize had been simply packed in common salt. These had lost little, if any, by evaporation, had good, consistent albumen, and were pleasant to the taste. The exhibit which took the second prize was served as follows: Melt one part of white wax to two parts of spermaceti, boil and mix thoroughly; or two parts clarified suet to one of wax and two of spermaceti. Take new-laid eggs, rub with antiseptic salt and fine rice starch. Wrap each egg in fine tissue paper, putting the broad end downward; screw the paper tightly at the top, leaving an inch to hold it by. Dip each egg rapidly into the fat heated to 100 degrees. Withdraw and leave to cool. Pack broad end downward in dry, white sand or sawdust. The judges were inclined to believe that had the trial been for a longer period than two months, this latter method would perhaps have proven the better of the two. The eggs were excellent, and on stripping off the waxed paper the shells presented the clean, fresh appearance of newly laid eggs.

The following is a recipe for packing in salt: Cover the bottom of a keg, cask, jar, hogshead, or whatever you choose to pack in, with a layer of fine salt two inches deep; upon this place the eggs, small end down, and far enough apart so that they will not touch each other or the sides of the receptacle; then put on another two inch layer of salt, then another layer of eggs, and so on until the package is full. This is the method that we used, and is on the whole the best method for housekeepers and for those who have only a small number to pack for market. The salt can be used over and over again.

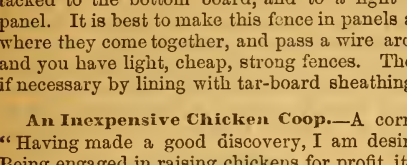
The following recipe is also given for keeping eggs: Put them in an open-work basket or colander and immerse them for a moment in boiling water; let them stay just long enough to form a film on the inside of the shell; this excludes the air. Then place them in some convenient vessel, small end down, and set them in the coolest part of the cellar, where they will keep till wanted for use.

Cheap Poultry Houses.—The following directions for building cheap poultry houses are clipped from W. H. Todd's descriptive catalogue:

We find the best and most successful plan to manage and make fowls pay is to scatter them over a large range in fields and orchards. For this purpose cheap, convenient, and comfortable houses are best. My plan is to build 16 feet long and 8 feet wide, 7 1-2 front (facing south), and 4 1-2 back, boarded upright and battened, with a shed roof, shingled. Sills are 2x4 inch-plank halved together. Plates, same size. Rafters, 2x2. Lay the sills on sleepers, and on these lay a tight floor, which cover with dry earth 4 to 6 inches deep, removing and renewing twice a year. This keeps fowls dry, warm and healthy. Place an entrance door near one end, on the front, and

at least two windows of six 8x10 lights. Partition across the middle, with a door. Fix ventilators at the highest point in each end, sheathed to exclude storm and wind. Erect roosts 20 inches high, for twenty fowls, with a movable nest or two, and a box, partly filled with dust and ashes, and you are ready for "business." Forty large fowls can be accommodated and thrive well. Since the house is double we are in shape for running two breeding yards. Fence can be built cheaply with lath nailed upright to two 1-inch-thick pieces, the lower one 8 or 10 inches wide, and the upper about 2, 30 inches apart; the lath may be 3 inches apart, and a short piece 16 inches long, tacked to the bottom board, and to a light strip running lengthwise the panel. It is best to make this fence in panels about 12 feet long. Set a post where they come together, and pass a wire around panels and post, fasten, and you have light, cheap, strong fences. The house can be made warmer if necessary by lining with tar-board sheathing.

An Inexpensive Chicken Coop.—A correspondent writes as follows: "Having made a good discovery, I am desirous of giving it to the people. Being engaged in raising chickens for profit, it was necessary to make cheap coops to keep them in for a few weeks. I take an old barrel and tack every hoop on each side of a seam between the staves with an inch wrought nail; after clinching the nail, I saw the hoops off on the seam. Then I spread the barrel open, as shown in the illustration, by cutting a board about twenty inches long for the back of the coop, and two small pieces to tack laths on for the front part. I have the upper section of the back fastened with leather hinges, so that I can open it at pleasure. Everybody has old barrels which are almost valueless, and the trouble and expense of making a coop of this description is so small that it is not worth mentioning, while to buy the material and make a coop of the same size, it would cost about one dollar."



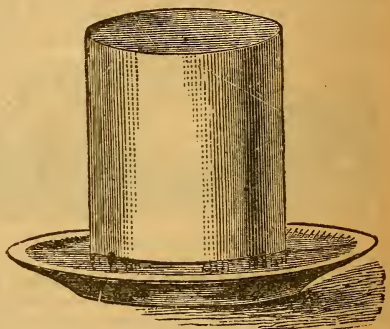
AN INEXPENSIVE CHICKEN COOP.

Chicken Cholera.—A New Jersey correspondent gives this remedy: Take of pulverized copperas, sulphur, alum, cayenne pepper and rosin, of each equal parts, and mix one teaspoonful in four quarts of meal. Give three days in succession, then once a week as a preventive. I have seen it used successfully. It will not cure those which have it, but will prevent spreading of the disease. For a disinfectant, use crude carbolic acid—one tablespoonful in one gallon of water. Sprinkle the hen house often, say about twice a week.

Another correspondent says: I used a strong tea made of white oak bark, which I used in the drinking water as a preventive. When a fowl was taken sick I used it pure, giving several teaspoonfuls at a time, four or five times a day. I have taken fowls so far gone that they were past eating or drinking, and cured them in a few days with this simple remedy. As a disinfectant I use crude carbolic acid, pouring it on a board in the chicken house and on the perches, coops, etc., or anywhere that the fowls frequent. If you will try this plan for awhile, removing all infected fowls from the flock, and keep the surroundings clean, I think you will soon get rid of the disease.

The following prescription we find in the *Southern Cultivator*, and it is said to be very efficacious in chicken cholera: Glycerine and water, each a half ounce; carbolic acid, ten drops. When the first symptoms of the disease are apparent, give five drops, and repeat at intervals of twelve hours. Usually the second dose effects a cure. A neighbor informed me that cholera was very destructive among his poultry, and at my suggestion he tried the foregoing recipe. He reports that the progress of the disease was promptly arrested, and in almost every case a cure was accomplished.

Infertile Eggs.—There are many reasons why eggs hatch so poorly, when from pure bred stock, one of the greatest being want of *stamina* in the flock from which the eggs came, caused by being kept too closely confined. As a rule it is best to procure eggs for hatching from fowls which have free range, which is a great promoter of healthfulness, though there is no reason why eggs should not hatch well when from fowls in confinement, *if* those fowls are given good care, plenty of food, and have good sized yards to run in. Want of fertility may be due to running too many hens to a cock; about ten hens of the Asiatics (Brahmas and Cochins), and from ten to fifteen of the laying breeds (Leghorns, Hamburgs, etc.) to a cock being about the right number to secure good results, other things being equal.



A CHEAP CHICKEN FOUNTAIN.

A Cheap Chicken Fountain.—Take an emptied tomato can, bend in the ragged edges where it has been opened, make a hole in the side one quarter of an inch from the edge, fill it with water, put a saucer on it, and quickly invert both. The water will then stand in the saucer constantly at the height of the hole. Chickens can drink, but cannot get in the water, which remains clean.

Chicken Lice.—The first signs of lice are with the early setting hens. From their nests soon a whole house will be overrun with the pest. Chicks show the presence of lice very quickly, and lice are certain death to them if they are not protected. Have all nests movable, and change the contents frequently. With sitting hen's nests be sure to have the nest clean and the box and surroundings whitewashed before she is placed. Whitewash and the dust box are the surest preventives of lice. Put two or three coats of whitewash on every interior spot in the building; the lice harbor in the crevices of the rough sidings, and on the under side of the perches. Let the fowl house have a dust box. Mix hot ashes with the dust occasionally to dry it. Do all this early in the year, before spring laying and sitting. Kerosene and lard when applied is a sure cure, but they are too often dangerous in their effects. A little castor oil on the head and under the wings of sitting hens is very effective. Don't keep a brood hen in a little coop without a dust wallow. If you want your fowls to be free from lice you must keep their habitation clean. The best way to do that is by occasional change of the nest contents and a thorough whitewashing of the apartment.

Raising Turkeys.—The difficulty of raising turkeys is a serious drawback to the profits of the business, but the exercise of care will obviate the difficulty. At first, and for about six weeks, turkey chicks are very delicate, so much so that even a warm shower will finish them. If they can be kept alive for about two months they begin to assume a more robust character, and will soon become the very hardiest of poultry. The chicks, therefore, should be provided with shelter, and the shed which furnishes this would be all the better if it had a wooden floor. The best feed for the first week is hard boiled eggs, mixed with minced dandelion. It is thought the dandelion serves to keep the bowels in order. At all events the young birds prefer dandelion to all other green food. At the end of the first week add gradually to the boiled eggs bread crumbs and barley meal, constantly lessening the amount of egg until at the end of three weeks it may be entirely discontinued. Now give boiled potatoes as a part of the food, and a small portion of some small grain may be added, in fact making the food very much like that of other poultry. If fed in this way and kept dry, they will come along all right.

How to Raise Ducks.—A writer who thinks unlimited water a bad thing for young ducks, recommends the following treatment for them: "Ducks are easily hatched, and, if properly managed, they are easily raised—much more so than chickens or turkeys. Probably the worst thing for ducklings is the first thing they usually receive, and that is unlimited range and water to swim in. The little things are, in a measure, nude, and should be kept in pens with dry soil floors or stone pavements that can be washed down daily. No kind of poultry will succeed on bare boards. All the water they need is best furnished by burying an old pot in the ground and laying a round piece of board on top of the water with room for the ducks to stick their heads in and fish out the corn that is put in the water. This amuses them and does no harm, while, if allowed to go off to ponds or streams, they are very liable to fall a prey to vermin in some shape, or to get their bodies wet and chilled from remaining too long in the water. Their pens must be kept clean if they are expected to thrive.

Gapes in Fowls.—The parasite that causes gapes in fowls is of a red color and about three-quarters of an inch long. The remedies are numerous, but chiefly consist in removing the worms. One way is to moisten a feather from which all but the tip of the web has been stripped, with oil, salt water, or a weak solution of carbolic acid, introduce it into the windpipe, twist it around once or twice, and then withdraw it. A teaspoonful of sulphur mixed with a quart of corn meal and water, and fed to the fowls morning and evening, is also a good remedy.

The *Poultry World* says: As soon as we discover any symptoms of gapes among our chickens, we know that there are worms—very small red worms—in their windpipes, and we give them camphor in their drinking vessels strong enough to make quite a taste of the camphor. Then, if any get the disease quite badly before we discover it, we force a pill of gum camphor down the throat, about the size of a small pea, and the fumes of that dose will kill the worms. No kind of worms can live in camphor; hence, camphor must be a powerful vermifuge.

A Connecticut poultry raiser writes: "Perhaps some who raise fowls will be interested in my experiment tried last season on a chicken with the gapes. I gave it about a quarter of a teaspoonful of kerosene, and as it seemed bet-

ter for a day or two, I repeated the dose, giving nearly one half a teaspoonful for the second time. The chicken was about the size of a robin at the time, but is now full-grown, weighing several pounds. I cured chickens affected with a disease we thought cholera, by giving powdered alum dissolved in water."

Eggs.—How Increased.—If an increase of eggs be desired in the poultry yard, before large sums are expended in the purchase of everlasting layers, we would recommend the system of keeping no hens after the first, or at most, after the second year. Early pullets give the increase, and the only wonder is that people persist, as they do, in keeping up a stock of old hens, which lay one day and stop the next. In some parts of Europe it is the invariable rule to keep the pullets only one year. Feeding will do a great deal—a surprising work indeed—in the production of eggs, but not when old hens are concerned; they may put on fat, but they cannot put down eggs. Their tale is told, their work is done; nothing remains to be done with them but to give them a smell of the kitchen fire, and the sooner they get that the better.

Late Chickens.—Late chicks may be more profitable than early ones. Chickens from eggs set in August and September may be kept warm in a tight, glazed house, and fed so that they will grow continually through the winter, and if they come later all the better, if they are well kept and fed. The early broods will be salable at good prices, when the market is bare of chickens, and the later ones will furnish spring chickens long before the usual supply comes to hand. Spring chickens hatched in fall, or even in winter, are rare, but not entirely unknown to a few persons who made the discovery that with good feed, warm quarters, a warm mess at least once a day, warm drink and cleanliness, there is no difficulty at all about raising them, and at a good profit.

Cure for Scaly Legs in Fowl.—A sure cure of scaly legs in fowl is effected thus: Insert a feather in the spout of a coal oil can so that too large a stream will not run out; get some one to hold the fowl by the wings; take hold of a toe of one foot at a time, and pour a fine stream from the hock joint to the end of each toe, taking care that all parts of the foot are wet with it. One application a year is enough, if done at all, and at the time when they need it, say during January or February. The scaly appearance is caused by an insect, which the oil most effectually kills, and leaves the legs clear and bright looking. This will answer even when the legs are twice their natural size, which is frequently the case when neglected.

Roup.—Fowls exposed to dampness in severe weather are apt to take cold, which often culminates in roup. The writer has cured this disease by injecting kerosene into the nostrils by the means of a bulb syringe, and then using it to gargle the throat. The latter is effected by holding the throat close enough to prevent swallowing, and, after the gargling, pouring the liquid out on to the ground. Repeat this once the next day; then feed with boiled rice and scalded milk, keeping water away for a few days.

To Get Rid of Skunks.—To rid your poultry yard of skunks, purchase a few grains of strychnine, roll it up in a ball of lard, and then throw it at night outside the yard, where the animals' tracks are seen. As they are very fond of lard, they will swallow it quickly, and in the morning you will

find your enemy dead. But you must be careful to shut up the dogs and cats, as they are equally fond of lard. It is the easiest way to kill any vermin, as they die very soon. Skunks will kill and eat full-grown ducks and hens, and suck their eggs, whenever they can gain entrance into the poultry-house.

Road-dust for the Hennery.—Collect a few barrels of dry earth, road-dust, fine dry dirt in the cornfield or potato patch, or anywhere that is most convenient. This is a handy thing to have in the fall and winter for sprinkling under the roosts and on the floor of the poultry-house. It absorbs ammonia, keeps down smells, and keeps things ship-shape. It will pay to attend to this when it can be so easily done. It costs but little, and is a real advantage.

The Langshans.—There is a prominent feature of the Langshans not possessed by the Black Cochins, which is activity. They come in as an extra desirable breed, between the leghorns and the sitters, for they commence to lay early, and when about to enter upon incubation are easily broken. They are large in size, fine-boned, hardy, and grow rapidly. They are the strongest rivals for public favor that the Plymouth Rocks have, and are just as certain to go to the front as if they had been known for centuries. Their qualities as a farmer's fowl are good, and they will entirely supersede many other breeds in time.

Poultry Manure.—Collect the droppings as often as possible, and compost them with dry dirt. If dry dirt is inconvenient on account of the earth being frozen, use good ground land plaster instead. The mixture of ground plaster and poultry droppings is better than either alone, and the ammonia is thereby saved. A good dusting of plaster over and under the roosts, and plentifully scattered all over the floor of the poultry house, conduces to the health of fowls and destroys foul odors.

How Nests Should be Made.—Eggs hatch much better if the nests are made by placing a cut turf, and shovel of mold, sand or ashes in the box or basket, and on this a little short straw, than if straw only is used. In this way a convenient hollow is obtained that prevents the eggs rolling out from under the setting hen. In cool weather the eggs are thus kept of a much more equable temperature than in nests made simply of loose straw.

To Fatten Geese.—To fatten geese, an experienced practitioner says: Put up two or three in a darkened room and give each bird one pound of oats daily, thrown on a pan of water. In fourteen days they will be found almost too fat. Never shut up a single bird, as geese are sociable and will pine away if left alone.

Nests of Sawdust.—To prevent hens from scratching their nests make the nests of sawdust. Do not have the boxes too large—only long enough for two nests, with a partition. Place a little hay on the sawdust until the hens get accustomed to it; also sulphur, to prevent vermin.

Hens Eating Eggs.—If hens get into the habit of eating eggs, take enough bran and corn meal of equal parts for one feeding, and enough vinegar warmed to make the meal wet enough for the hens to eat. Mix together and feed it to the hens.

How to Fail.—There are many persons who have started in poultry raising, and at the end of the first, second or third year become tired of the business, and quit it in disgust. This has been the case more particularly with men who undertook to breed fine pure-bred stock for sale, with the hope of immediately making large sums of money. We often hear some one state that he would not have a Brahma, a Leghorn, or a Game fowl about his yards, but we as often learn that at some period in said individual's life, through his own ignorance or want of energy and ordinary ambition, he has not only defrauded himself out of money, but has made his fowls the instruments with which he has accomplished the work. Himself entirely at fault, yet he throws the blame upon the fowls. They eat too much; they ruined his gardens; they would freeze their own combs and feet; they would die on their nests; they would not lay; in fact, they were the poorest breed of fowls to be found in the country.

In every such case the whole trouble is in the make-up of the individual and not with the fowls, and if any reader of this article has been a loser in the poultry business, whether in raising fowls for market, or for breeding and exhibition stock, and will state his case, we can refer him to men in the same business who are to-day making money out of the same breed of fowls.

We have for the last fifteen years given this matter some attention in order to decide in our minds what are the stumbling blocks over which these men fall, and we here name a few of them and give some hints which will aid the beginner in commencing and carrying on the business until he has gained a firm footing. The first step this man who fails takes when he has decided to launch out in the poultry business is to purchase eggs from pure-bred fowls, or the fowls themselves, of the variety he most admires, feeling confident that with and from these, his start in the business will be well established, and that at the end of the first, or of the commencement of the second season, he will stand on the top-most round of the ladder, side by side with men who have been breeding his favorite fowls for years and are known the world over, and that all his extra fowls and eggs will find a ready market at enormous prices.

He immediately notifies a score of breeders that he is now ready for business and will be pleased to receive by return mail their very lowest, rock-bottom cash prices, for their very best pure-bred stock and eggs from same. The circulars and price-lists are received, and without having posted himself as to who has the best fowls of the breed he desires to purchase, he orders fowls or eggs from the man who offers the greatest inducements in quantity. With him quantity is the thing, not quality, for his figures show that if a trio will net him $50 per year, double the number of fowls, and he will have $100 net profit for the first season's labor. Then, to his mind, the cheap are possibly as good as the dear, and if they are not, who can tell the difference from the eggs?

The fowls are received, pronounced good by the neighbors, placed in the "old hen-house" which has not been cleaned out for years, receive plenty of food and good care, until they become an old story, and from that hour are neglected. Hens are set, but the lice drive them from their nests, or, in case the hens are of a determined, desperate disposition, the lice will sap the last drop of life blood, and leave bone, muscle and feathers on the nest, and a query in our young fancier's mind, why pure-bred fowls are so delicate, so hard to raise, and die so mysteriously. Mention lice to him and he is thunderstruck. *He* never saw a louse on one of *his* hens. State the fact that lice *killed* his favorite hen, and he will not only deny *it* in the strongest

terms, but you will see that he already weakens in his good opinion of his favorite stock.

His fowls, run down from attacks of lice, out of order from a steady diet of whole corn, are attacked with roup, and finally set at liberty to mingle with the neighbors' common stock. A few chicks are hatched, and those which survive the ravages of cats, rats, and lice, contract disease from exposure to storms, want of shelter, and shade, and a diet of sloppy and sour feed, as often thrown upon the filthy ground as otherwise. Thus they are dwarfed in size, have delicate constitutions, and become, in fact, a flock, the condition and appearance of which would dishearten any man.

With this stock for a foundation, our fancier advertises eggs from prize-winning stock, and sells only to receive condemnation from the buyer for the motley lot of chicks raised from the eggs. Unknown to our young fancier, his fowls had been crossed with his neighbors' barnyard fowls, and his own chicks are now of all colors, and he remembers the breeder of whom he made his purchase as a knave, the fowls as a worthless breed, and the poultry business as a failure, little thinking that there is no one to blame but himself, and that by proper management, a little thought and care on his part, the losses could have been turned to profit.—*Poultry World.*

How to Start and Stock a Hennery.—The subject of poultry keeping, writes Dr. A. M. Dickie, is attracting attention now from parties who have not hitherto given it any notice. Not knowing anything about it practically, they ask for advice and information respecting methods of procedure. To answer such inquiries privately would require too much time and work, and we take advantage of the opportunity presented here to discuss the general principles underlying the subject in a public way.

Poultry is kept for two ends: first, to supply eggs, and second to furnish flesh for food. In some sections one of these ends is sought, and in others the different one, while occasionally a man may be found who wishes to combine them both. It will be well then for a person to determine what he wants to produce in his poultry yards. If he wants eggs mainly he will select a different breed or breeds than would be chosen to produce market poultry.

A person not knowing the habits or characteristics of the different breeds or varieties may easily make a mistake in selecting the proper one for his purpose. Since the furore in poultry fancying and poultry journalizing has run so high, admirers of particular varieties have been so enthusiastic in praise of their favorites that every good quality which could be enumerated has been claimed for their specialty. The best layers, the smallest eaters, the quietest, the best foragers, the handsomest, the most profitable, in every way, the most desirable fowl, etc., etc., is claimed respectively by breeders of nearly all the different kinds of fowls.

Most every one should know—but every one don't—that no one breed can excel in all these characteristics applied to all breeds. Some will lay more eggs in a given time, say a year, than others; some will make more meat than others; some will sit better than others; some are better mothers than others; some are hardier than others; some will eat more than others; and so we might go on to the end of the list of qualities, because no one breed is best for all purposes. But if a man knows what he wants to produce in his poultry yards, his liability to make a selection is much reduced, unless he makes the mistake at the beginning—of wanting to secure all the ends at once for which poultry is kept.

Plymouth Rock Cock "Perfection 2d," Winner of First and Special Prizes at New York, February, 1886, Bred and Owned by A. C. Hawkins, Lancaster, Mass.

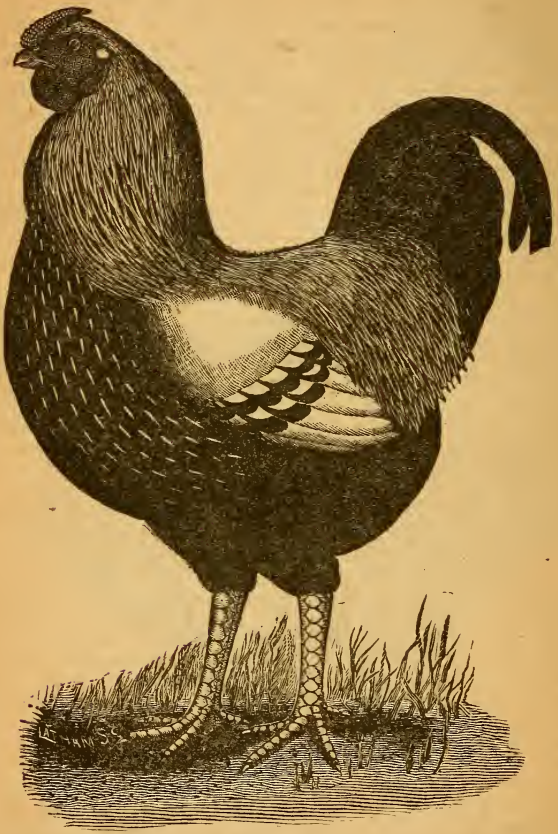
Where one wishes to make a specialty of egg production, he must leave meat production to be pursued by somebody else, and the reverse. The best layers are not the best for table use, and, conversely, the best for table use are not the best layers, no matter who says so. Most people understand that the best milk cow will not make the best beef cow at the same time; and that the best brood sow will not be best for pork. The same principle is applicable to a chicken. The juices, fats, salt, aroma, etc., that go to make savory, toothsome beef in the one case go off into the milk pail, in the other it goes into the egg basket. It is not a very difficult matter to make a good sandwich, provided one has the material, but it can't be made all of meat, or bread, or butter, though meat, bread, and butter are all necessary. So if you want eggs you must have one kind, and if you want meat another kind of chicken is necessary.

Plymouth Rocks.—Unquestionably the most popular fowl with the American farmer is the Plymouth Rock. They have been tested for the past fifteen years with all the leading varieties, and have been found to be the best all purpose fowl. At eight weeks old they make a plump two pound broiler, having yellow legs and skin. The pullets commence laying at five and a half months old, and are very prolific layers in the winter.

Mature cocks of this variety weigh ten to eleven pounds; hens, eight to nine pounds. This breed was originated some twenty years ago in southern New England, and they have increased in popularity from the very first, and earned their good reputation on their practical merit. They were produced by crossing the Black Java and American Dominique, taking their color from the latter variety. They make one of the most attractive fowls on the lawn and in the poultry yard. Our illustration is of a first prize cock bred by Mr. A. C. Hawkins, Lancaster, Mass.

Eggs by Weight.—It is annoying to the breeders of blooded and fine fowls to find, when he offers for sale eggs nearly twice as large as his neighbor's, that they bring no more per dozen than do the smaller ones. Also, the consumer is often vexed to find that he must pay the same price to-day for a dozen eggs weighing a pound that he yesterday paid for a dozen weighing a pound and a half. Besides, an egg from a well-fed fowl is heavier and richer than one from a common fowl that is only half fed, so that weight compared to size is an indication of richness. Thus, eggs of which eight will weigh a pound, are better and richer than those of apparently the same size, of which ten are required for a pound. Of course, with eggs at four or five cents a dozen (and hundreds of dozens have been sold in past years at these figures), it is not much matter as to the size; but when the price ranges from twenty-five to fifty cents per dozen, it a matter worth looking after. It is high time that this old style of selling and buying eggs were discontinued. It is a relic of the past, and reminds us of the time when dressed hogs sold for a dollar each without regard to size, and were dull sale at that. Insist upon it, then, you who raise poultry and eggs for market, that the price for eggs shall be so much per pound, and then it will be some inducement to farmers to raise a better class of fowls, and all will get what is their just dues.—*American Rural Home.*

Wyandottes.—One of the latest varieties of pure bred fowls to attract the attention of the fancier and farmer is the Wyandotte. It was originated some twelve years ago in New York State, and is said to have been produced by crossing the Silver Spangled Hamburg cock with the Dark Brahma hen. This variety has become very popular within the past three years as one of the most practical table fowls.



Wyandotte Cock "Prince Leon," Winner of First and Special Prizes at New York City, 1885 *and* 1886, *Bred and Owned by A. C. Hawkins, Lancaster, Mass.*

They have rich yellow skin and legs, are quick to mature, very plump in body, and small boned—all qualities which commend them for table use. They have small rose combs, and stand the cold weather without freezing; being excellent layers in winter, producing an egg of brown color.

One of the most extensive breeders of this variety is Mr. A. C. Hawkins, of Lancaster, Mass., whose fowls have taken many of the highest prizes at the largest exhibitions. He sends large quantities of eggs for hatching purposes and breeding stock to all parts of the world. Our illustration is from one of his New York prize winners.

Artificial Incubation.—I had the pleasure of visiting the large poultry yards of James Rankin, Esq., at South Easton, Mass. Mr. Rankin is a successful and practical working farmer; he keeps a herd of twenty good grade Jersey cows and runs a milk wagon in the neighboring villages, where he also sells a large amount of vegetables in their season; but his chief delight and also the chief source of his profit is the poultry. Sixteen years of experimenting with hens and various patterns of incubating machines have resulted in the invention and perfection of a very satisfactory and simple patented machine, with which he feels reasonably sure of hatching 90 to 95 per cent. of the fertile eggs. The difficulty, however, is not over when the chickens or ducklings leave the shell; at first he puts them under hens for brooding purposes, but soon discovers that with an artificial brooder he could rear more chickens and healthier ones than with the old hen.

The advantages of the use of incubators over sitting hens are well understood; they can be made to work early in the winter and spring, when brooding hens are scarce, they can be relied upon to turn out a chicken for almost every fertile egg, and the artificial brooder can be relied upon to grow healthy chicks free from vermin. The essentials for success in this business are not very different from those required for success in caring for a greenhouse or hot-bed. One must give his attention to the thing and not forget it; a few hours' neglect at the right time would easily spoil a month's work and many dollars' worth of eggs, but reasonable care and attention, and the use of a fair amount of common sense, will enable any intelligent person to acquire the needful experience to insure success.

Mr. Rankin has found the raising of young ducks for market when nine or ten weeks old, a very profitable branch of the poultry business. The young ducks are hardier and more easily raised than chickens; they grow more rapidly, and the demand for them at good prices lasts through the entire summer, so that several successful broods may be easily marketed. Last summer he raised some 3,000 ducklings. They need little artificial heat after hatching, and grow very rapidly, attaining a weight of ten pounds per pair at ten weeks old; the price varies from thirty-five cents per pound to twenty cents or less in the fall.

The white Pekin duck is the only variety used by Mr. Rankin; he finds them larger, more quiet and more patient in confinement than other varieties. The laying stock consists of 200 or more ducks and 600 or 700 hens, all raised from incubators last year, and they are as vigorous and healthy a flock as one might wish to see. Mr. Rankin has used incubators only for hatching his stock for six years past. For hens he raises the Light Brahmas and the Plymouth Rocks only; these are good winter layers when eggs are wanted both for market and for incubation; the chicks grow rapidly to the size needed for broilers. In June he sells all the laying stock of hens, finding it more profitable to depend upon early hatched pullets every year for winter laying. To insure fertility in the eggs in winter, care must be given to let the hens run out and take exercise whenever the weather will permit —shovelling off the snow in front of the houses to give them a chance. It

is important also to give them a variety of food in which boiled potatoes and raw cabbage are important articles, together with a little meat or scraps.

The ranges of poultry houses are of simple and cheap construction, being about nine to twelve feet wide, and some of them 200 feet long; they are built on posts with no floor, studs six feet high, with span roof; the south side furnished with windows three feet wide with five feet spaces between of boarding, which is hemlock covered with tar paper, held in place by laths and painted over with tar—cheap and durable. These houses are divided by lath partitions inside, and lathed yards in front, each compartment containing about twenty or twenty-five pullets and two cocks. The proportion of ducks is about five to one drake.

The eggs are collected two or three times a day in cold weather to prevent their being chilled, and removed at once to the incubator room, which is a cellar with walls five feet high covered by a double boarded roof to insure an even temperature.

Here four incubators are in operation, each able to hold 1,100 eggs, and on the day of my visit two of them were hatching their brood of ducklings. It was a very interesting sight to see the callow and helpless young things breaking their shells by hundreds, and waddling around in the most abject manner. They very soon, however, became lively and active, and when one considers that they will come to market in May, at something over a dollar apiece, and that the incubators can produce another crop every month, it will be seen that it will not require a great deal of advertising on Mr. Rankin's part to induce a good many others to copy his methods and endeavor to gain his golden rewards.

In fact it seems to me quite likely that the danger now is that many young Americans with their accustomed dash, will rush into this business and glut the market with young ducks and chickens. The business has never, until quite recently, been systematized and successfully managed upon a large scale. The limit to the successful extension of the business now seems to be the capital and business tact of the man who manages it, rather than any inherent difficulty in the business itself.

The care of motherless chickens when produced by the thousand, is not so laborious as one would imagine. Mr. Rankin asserts that it is far less to care for them without the hen's help than with it. For the first thirty-six hours after hatching they require only to be kept warm in the vacant space under the drawers of the incubator; they are then removed to the brooding machines and fed on hard-boiled eggs, using such as have been taken out of the incubator as not being fertile; bread crumbs, dough of scalded meal mixed with middlings and whole wheat, and cracked corn as they grow larger. A very essential item in the bill of fare for young chicks and ducks is some kind of green vegetable, the refuse lettuce, dandelions or cabbage leaves of the market gardener, chopped onions, cabbages and other vegetables are excellent, and a little meat occasionally. They need to be fed often, four or five times a day, and if they can be given milk to drink it will help along their growth very much. Above all things encourage them to run out in the sunshine whenever the weather will permit; if the snow covers the ground shovel it away so as to give them a chance to run, which is very important. After April 1st, the brooding can be best done in the open air with a suitable machine. The chicks need no brooder after they are five or six weeks old, and the ducks need far less brooding than the chickens.—*W. D. Philbrick, in N. E. Farmer.*

Profit in Poultry.—Says James Rankin in *The Homestead:* I have sixteen cows in my barn; my neighbors call them good ones. The milk is sold in a neighboring village at remunerative prices. It requires the labor of two men and one team to milk, care for these cows, and deliver the milk. I have 350 pullets in my yard; with but a tithe of the labor and capital employed, these pullets last winter made me more than double the clear money that my cows did.

I am well acquainted with two young men who are running a poultry and dairy farm conjointly. The one is an invalid, keeps 1,000 hens, the care of which occupies about one-half of his time. The other keeps thirty cows, from which he makes butter of so good a quality that it really commands eight to ten cents above the standard price. This man raises the usual farm crops, reads the papers carefully, knows something of labor and its application, and runs his gang of four or five men with an eye to business. Yet the invalid brother clears double the money from his 1,000 hens that his brother does from the whole farm.

One instance more: E. Damon, of South Hanson, Mass., told me not long since that he had 750 pullets in his yard, 600 of which had been confined in one building all winter without stepping out of doors. These fowls had furnished him with thirty-five dozen eggs per day during the winter. These eggs were taken at the door at forty-two cents per dozen. This gave him $11 clear profit per day, with only a few hours' care.

Single Comb Brown Leghorns.—Probably since the awakening in the interest of poultry there is no variety which has taken the attention of the people more favorably, and held its own so evenly and so well, as the Brown Leghorn fowls. In all of the ups and downs, with all the criticisms of our most particular fanciers, this variety has taken a steady and increasing share in popularity with the people. The Leghorn family of fowls consists of the Brown, White, Dominique, and Black varieties. The first, then, of these are supposed to have sprung from an importation of about the year 1852, from Leghorn, Italy, from which they take their name. They were called Red Leghorns, and with the careless way of breeding and selecting, which was to raise all that hatched, and breed from all that lived, there soon appeared fowls of different marks, till some came white, some Dominique, and some retained their original Brown. As fanciers began to breed them and brought to bear upon them their particular tests and fancies, selecting to certain color and markings, they soon had them divided up into different families, which bred like parent like chick, till now we have our very beautiful distinct classes, Brown, White, and Dominique. (The Black Leghorn is a later importation.) The qualities of the Leghorn fowl, which have so worked upon the people of this country and given it so high a place in the American fowl yard are its capacity and disposition for business. If we can give the people something which will be pleasing to the eye and bring in the almighty dollar, we touch them at a very tender point, and that is just where the Brown Leghorn fowl touches us. We have in it something which to see around us is to enjoy, and to own, is to our profit. They are from their shell a hardy, independent, happy chick—hunting for worms and bugs. They grow very fast, and at the age of two months the young cockerels put their crow in with the others, and the pullets, at four and five months, put their eggs with those of older and more matured hens. This they keep up while they live, seemingly because they like it, and again because they can't help it.

They give no trouble by wanting to sit, and are practically non-sitters. If handled rightly they are the best winter layers we have, in comfortable quarters laying in January and February quite regularly. Their eggs are of good size, pure white. In competition with other varieties, they have almost without exception come out ahead in number of eggs produced.

They are of superior quality for the table. The young cockerels are good broilers at the age of two and a half months, and their flesh is as

Single Comb Brown Leghorn Cock "Victor," No. 6,204, Winner of First and Special Premiums at New York Show, February, 1886. Owned by W. N. Croffut, Binghamton, N. Y.

juicy and sweet as the best. In describing the cock, we would say it has what is known as the Single Comb. This stands very straight and firm on the head. The points of the comb are evenly and deeply cut. The fowl has a red face and white ear lobes. I would here say this is quite an important feature, and a great deal in favor or against the fowl is in accord-

ance with the appearance of its ear lobes. The eye is bright red. The plumage of the cock is bright red, or bay hackle, back and saddle, solid black breast and tail, and he has yellow legs. The hen has the same single comb, which falls over to one side, white ear lobes. Her plumage—hackle,

Rose Comb Brown Leghorn Cock "Earle," No. 6,207, Winner of First Premium at Sherburne, N. Y., January, 1886. Bred and Owned by W. N. Croffut, Binghamton, N. Y.

golden yellow striped with black, back brown, salmon-colored breast, and she also has yellow legs.

It should be said these fowls are very intelligent, and if handled carefully make the best of pets, and will allow of handling so that we can pick them up and cause no excitement.

Rose Comb Brown Leghorns.—What has been said with reference to the Single Comb Brown Leghorn fowl is equally true of the Rose Comb.

The origin of the Rose Comb fowls is often called for. We can say it dates back with the origin of the Single Comb, as there were Rose Combs imported then; and at the time of which we speak, when chicks were hatched of different colors, our reliable writers claim they were also hatched some with Rose Combs; these bred by themselves are our present Rose Comb Brown Leghorns. There is probably no difference in their quality as to usefulness. They are alike in build, markings, and appearance every way, with the exception of comb. Some prefer the Rose Comb to the Single Comb, as it is less liable to freeze in our severe cold climate.

I have made the breeding of these special varieties for several years, and am the originator of the Croffut strain of Brown Leghorns, which are well-known among breeders of choice Brown Leghorns.

W. N. CROFFUT.

Causes of Variation.—The causes of variation in fancy fowls forms a subject well worthy of the careful study of every fancier. To know what are the causes is the first step toward producing or taking advantage of them. Says a well-known scientific writer: "The good breeder only has to find in his yard the animal or bird that suits him, and then, through his understanding of his art, he knows that in the course of a few generations he can fill his yards with animals or birds of this color." I think that any breeder, who has a good knowledge of the business, will agree that is harder to find the ideal color, than to produce it when once found. But if we do find it, how can we keep and reproduce it? This may not be difficult for the expert to answer, but it is just what the amateur wants to know. How can he prevent variation and loss of the type? Now there are two prominent opinions as to the causes of variation. First, that there is an inherent tendency in all animal life to vary from the general type. This is probably the most common view, and the one which the mind most readily grasps; and yet, when we consider the evidence that is offered in its favor, we do not find it strong. Space forbids our doing this, but consideration of the matter I think will show that such inherent tendency to vary is assumed rather than proven, and the arguments for it are somewhat weak.

A second opinion, which is to-day looked upon with favor by many scientific writers, is that variation is the result of changing conditions and circumstances of life. Broadly, we know that this is true. The amount of food and the selected season of hatching has produced the difference between the giant breeds, the Brahmas and Cochins, and the diminutive Bantams. The conditions have secured these prominent differences. The question is how far do the influences of conditions extend? Do they produce every variation in feathering? I must say that all my own personal experience in breeding, with careful observation, points in this direction. Here is a case in point: Last season I let two parties have eggs from one pen of Plymouth Rocks; each hatched from forty to eighty chickens. In one case the conditions were unlimited range, good feed, and the climatic conditions to which all my birds are accustomed. The young stock were as good as usual. In the other case there was no range, no shade, but the best of feed and care otherwise. These last birds grew very fairly, and seemed healthy, but you could scarcely find a bird in the lot through the dark blue bars of whose feathers did not run streaks of white. This did not occur with the other flock, from eggs from the same pen. If the conditions did not cause the variation, what did? Certainly not inherent tendency to vary, else both sets of birds would have presented this variation in some degree.

I cannot now present further examples in this line, although for one with large experience they are not difficult to find, but will content myself with one or two applications of what has been said. I have no doubt that a large part of the dissatisfaction which some persons find with the stock raised from eggs from reliable fanciers arises from their raising their stock under entirely different conditions from those which the parents have enjoyed. Our best fanciers all keep their stock under the best conditions possible to them, and for a man to buy eggs from them and then expect to raise nice birds under poor conditions, is nonsense. He may rely as much as he will on the principle that "like begets like." The hereditary law fully stated is, like begets like under precisely the same circumstances and conditions.

But a question will naturally suggest itself here: The climatic conditions existing in the different parts of our land are very different. What is the use, for instance, of a California breeder with his peculiar climate buying eggs of fine stock from Massachusetts in the hope of getting from them equally fine birds with those bred by their brethren of the latter State, if conditions so largely affect the development? The answer is obvious.

Our California friends do tell us of strange effects produced by their climate on feathering and other points; yet it is evident that unless one buys and breeds good stock he has no hope of producing it for himself; and there is also advantage as well as disadvantage to be derived from strong tendency to vary. Opportunity is given in this to produce birds which shall be, in some particulars, an advance upon the parent stock from which they are derived.

In concluding this article let me say that the advice of the scientific writers (whose habits of close observation make them the most to be trusted) to the breeder is, that when he finds the bird or animal which suits him, to do his best to keep its progeny under similar conditions of food and warmth and range to those which the parent has enjoyed, and thus he will be most successful in securing his ends.—*W. A. White, in Poultry Monthly.*

A French Poultry Farm.—Mr. T. Christy writes to a London agricultural paper of what he saw in the poultry establishment of Rouiller et Arnoult, six miles from Hudan, France.

The space occupied is six acres, and the Houdan is the only breed of birds kept. The eggs are collected from their own hens, and purchased from the farmers and cottages in the neighborhood. After being marked they are placed each day in the convenses, or incubators.

The incubator room is close to the house, and is about 18 feet by 12, and 7 feet high, and has a deep sanded floor. There are about thirty incubators in it of different sizes; at any rate, their capacity is calculated at 4,000 eggs, and they have hatched out 42,000 chicks this season up to 4th September. Knowing that some of our readers will "stop" at these figures, I wrote on my return to London, and got the figures confirmed by a letter This room is specially arranged for the purpose, with very sma windows, and every convenience of hot water, and the heat given o by this number of incubators keeps it at 70 degrees, each machine thus requiring a very small quantity of water changed night and morning. On the other side of the passage was the chamber where the chicks are taken to, and I saw that the day's produce was at least 300 chicks, all in the drying boxes. Some were calling loudly to be let out, showing that the time of probation, which is twenty-four hours, was nearly over. This compartment has very little light, and is kept at about 60 degrees. At this time of

the year the chicks of "twenty-four hours" are taken down the garden and placed in one of the very large runs. Leaving these buildings, we notice a large wind-engine for pumping up water into the tanks, and soon learned the necessity for this. Passing through a prolific garden, well stocked with fruit, we came to a wire wall, about eight feet high, running from side to side.

Golden Spangled Crested Polish.

In the center was a gate, leaving a passage about eight feet wide. This walk was bounded on each side by a bed of flowers and shaded by fruit trees. There were six large enclosures, about 100 feet square. Those nearest the house are allotted to the youngest chicks just hatched, and they were furnished with wooden houses, and in these are placed with rearing mothers, for those birds that feel cold to run into, also several pedestals piled up with tempting food.—*Poultry Nation.*

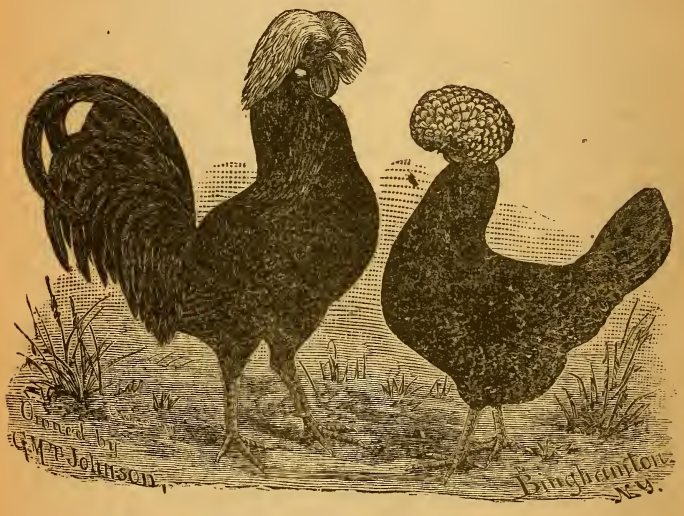
Golden Spangled Crested Polish.—This breed of fowls as a class are very prolific, are easily raised, and when full grown weigh from ten to twelve pounds per pair. They are in reality a fancy breed, and are just suited to the tastes of people of refinement, who can appreciate and take pleasure in owning a really fine bird. They are especially adapted to city residences, being extremely domestic in their habits. They lay large white eggs of oblong shape, very rich, which among epicures are in great demand. For beauty of plumage and good laying qualities this breed of fowls cannot be excelled.

How Eggs are Hatched.—The following item was sent us by a reader, from which we infer it is accepted as truth by nearly all persons who have read it. The item referred to is as follows: "People have an idea that the hen sits on the eggs for a time, and when the time comes for hatching, the chick bursts forth. There never was a greater mistake. The chick, until liberated from the shell by outside aid, is as incapable of motion as if it formed a solid with the egg, which it nearly does. You might as well inclose a man in an iron boiler, and tell him to get out of the shell without help. The chick grows on the inside of the shell, until at last the excrescence on the point of the beak of the bird presses against the inside of the shell, and bursts up a very small scale. Of course, when it does this, it at the same time breaks in that spot the inside skin of the egg. This admits the air; in a short time it breathes and gets strength to cry loudly. The hen then sets to work to liberate it; she brings it forward under the feathers of the crop and, supporting it between the breastbone and the neck, begins the work of setting it free. She hitches her beak into the hole by the raising of the scale on the chick's beak, and breaks away the egg-skin or shell all around the greatest diameter of the egg. The joint efforts of the hen without and the chick within liberate the prisoner and he struggles into existence, and gets dry under the feathers and the natural heat of the hen. All female birds which sit on their eggs to hatch them have the hook in the beak strongly developed. Even the broad-billed duck and goose have those hooks specially developed, and with them they liberate their young. In Australia, where everything seems to be by contraries, it is the cock of the bush turkey that hatches the eggs, and not the hen. It would be interesting to know whether the hook of the beak is better adapted for this service in the male than in the female. The hook of the beak of the ordinary cock of the common fowl is quite different from that of the hen—it is adapted for wounding in fighting, but not for hatching of eggs." Now, don't it beat all, what a vivid imagination some writers are gifted with, who attempt to explain subjects which they know nothing about? We must say the above theory in regard to the hatching of eggs is exceedingly amusing to us, for we have had some little experience in hatching chickens, and never yet saw a hen release a chick from the shell, never expect to see it done, and do not believe any one else ever saw it done. The whole article is nonsense of the sheerest kind, and the writer knew as little concerning the mystery of egg-hatching as he knew of the habits and customs of the inhabitants of the moon. The plain truth in regard to the hatching of eggs is as follows: When the chicken becomes fully developed in the shell, the point of the beak breaks a small hole, which admits air to the chick and forms a starting-place for the shell to break, which it does by the pressure of the chick against the shell from the inside. The shell has become rotten, it breaks very easily, and, like all other structures of similar shape, it breaks much

easier from inside pressure. A common stone jug, which will bear the weight of two men standing upon the outside, can easily be broken by filling it full of water or other liquid and then forcing in the cork with the hand. The absurdity of the whole matter is demonstrated by the fact that eggs in an incubator hatch without aid, and we have never noticed one of those artificial biddies that had a peculiarly-formed hook in its beak for the express purpose of liberating the chicks.—*E. J. Taylor, in the American Rural Home.*

White Crested Black Polands.—These fowls are an old breed. They have been bred for many years by a few, and of late much more attention has been given them, to produce fowls of good markings, till now they are really one of the handsomest varieties of domestic poultry.

In markings, it is very desirable to have a solid black plumage, shining



White Crested Black Polands.

in the sun; with a solid white crest. It is now objectionable to have any black feathers in the crest, or any white in the plumage of the body. There are many yards of really fine birds, but in which the white feather appears in the body plumage. This is much due to the carelessness of the breeder. No cock or hen should be used in a breeding yard, where the crest is mixed with black, or where the body feathers are tinged with white. Another very important point is, to get as small a comb as possible. So particular nowadays are good breeders, that they exclude a cock or hen with large comb. The consequences are that in some flocks, scarcely any comb at all will be found.

It will be seen that for beauty, these fowls can scarcely be excelled. In point of useful qualities, they will not produce as much flesh per head as the larger ones, as they do not weigh as much, but are fine table fowls of

about the size of the Leghorns. As layers, they rank very high. In some yards it is rare to find a sitting fowl during a summer. The laying hen will stop for a few days, and commence again with no fuss. If, however, we want a Poland hen to sit, it will only be necessary, as a general thing, to leave the eggs in the nest and not disturb her. Probably there is not a fowl which will make so handsome an appearance in a yard as a Poland. They attract great attention from the passers by, and are as handsome as peacocks at much less expense. I have bred this variety of fowls at intervals for the past thirty years, and now have as fine a flock as can be seen in this country. The parents of the chicks took first premium at the New York State fair in the fall of 1885, and all of the premiums at the Poultry exhibition held in Madison Square Garden in February, 1886. I am also breeding White and Brown Leghorns, Light Brahmas, Laced Wyandottes, and White Wyandottes. I send my illustrated circular to any address, on receipt of two-cent stamp. G. M. T. JOHNSON, Binghamton, N. Y.

Preparing Nests for Sitters.—Beginners in poultry raising, instead of rushing forthwith to buy an incubator, should master the art and science of natural incubation first, and should learn how to rear chickens by the natural method before experimenting with manufactured brooders. They can manage artificial processes all the better afterwards, in consequence of this apprenticeship. The requisites in the artificial method can only be attained in fact by a constant comparison with natural processes.

An important thing is to learn how to prepare the nests of your sitting hens. Try to make the nest to fit as nearly as possible the shape of the hen's body; use damp earth, as it is easily shaped, and it serves the purpose of furnishing the eggs with needful moisture. The curve of the nest must be neither too great, nor so small as not to keep the eggs near together. In case trouble may be expected from rats, cover nest, hen and all, every night, with a box having wire cloth at the ends or sides, to let in air.

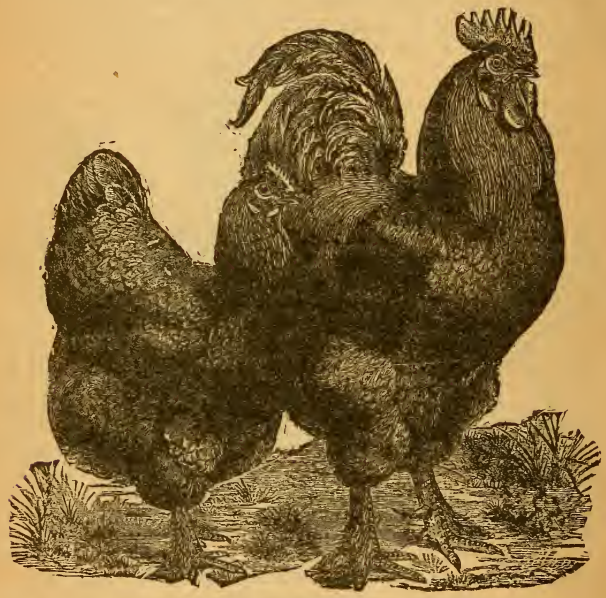
Don't use hay, as the seeds in it will bait the mice, and the hens will be likely to scratch for hay seed, and thus break the eggs. Straw, well *broken* and *made soft*, is the best material. Don't cut the straw in a machine, as that fills the nest with sharp points that prick the hen and annoy the young chicks.

Now keep in mind that the nest of your sitter must be kept free from lice during the whole term of incubation; keep the whole building free from them, nests and all. Any preparation that will aid the poulterer in annihilating lice in his houses and runs, or which will infallibly destroy these insidious enemies of domestic poultry that cause our birds so much annoyance and harm, is "a good thing" to have at hand by all breeders and fanciers who have a care for the comfort, health and welfare of their poultry stock.

There are several methods adopted and plans in vogue to help the fowl-keeper in this matter. Tobacco, snuff, whale-oil, sulphur, petroleum, carbolic powder and acid, coarse pepper-siftings, etc., are applied upon the fowl, under the feathers, or upon roosts and in the nests, with various results, more or less successful in the course of time.

Common, cheap, powdered sulphur you can always get at the druggists'. Scatter it in the nests and under the feathers of the sitting hens, and you will not be troubled with lice. If the lice be left to get over everything and the nests are full of them, the best way is to clean out and burn all the old nests, whitewash the house and nest-boxes inside and out, make clean, fresh

nests, sprinkling them well with sulphur, and your hens will reward you for the comfort you have afforded them. To rid the hens of lice, dust them well with flour of sulphur by night. The heat of the hen's body in the nest will cause the sulphur to continually give off a smell, which keeps lice and other vermin at a respectful distance. Provide dust-baths where your sitters can have access to them when they come off to feed. You are supposed to have laid up a stock of dry road dust, which you should collect in summer or early fall and store it where it will not gather dampness and freeze, and keep it dry and throw in a little every week to make up for what the fowls throw out while they are exulting over your generous care, and you may be sure it will be a paying item. But if you have neglected this sea-



The Langshans.

sonable provision, and the ground is now wet, substitute coal ashes. This material will do very well.—*Poultry World.*

The Langshans.—The Langshans are fine, useful and profitable fowls, and are justly very popular, as they bring their own certificate, and speak for themselves in every yard where they appear, and can stand wholly on their own merits wherever they are known. They are active, agile, and impetuous, are very prolific, and grow quickly, mature early, and lay well; although not given to being broody, they are *good sitters* and *good mothers*. Their flesh is white, and they have a very thin, white skin, and as a table fowl are equal to small turkeys, and not inferior to them in delicacy and flavor. Their plumage is of a uniform glossy black, and full of lustre; comb single,

and a bright red color. The beak is dark, with flesh-colored variations along the line of the mouth. Eyes dark, with but little difference in shape of pupil and iris. Neck long, full, and profusely feathered. Back short and fairly broad, rump high. Tail very full and flowing, carried rather high and forward, and furnished with good size sickles. Legs and toes dark, with a vivid pink color showing between the scales. Shanks scantily feathered to the end of the outer toes (there should be no feathers on the middle toes), bottoms of the feet are pink.

Their eggs are fair size and are beautiful in color, varying from the palest salmon to the darkest chestnut brown; on some there is a bloom like that on freshly gathered fruit, whilst others are spotted, often literally splashed all over with dark spots, and the same hen will tint her eggs differently one day from what she does on another.

When the chicks are first hatched they are very pretty, interesting-looking little things, active and sprightly to a degree, and all who have reared them —without taking form or plumage into question—agree that they are distinct in habits from any known breed. The presence of a stranger, or even a cross-bred chick, is easily detected in the newly-hatched brood; and it has been remarked by those used to breeding game that Langshans covey like young partridges. The invariable appearance of the chick when it emerges from the shell is as follows: its back is black, and the head, face, and breast is a mixture of black, white, and the different shades of canary color. The legs are in some pinkish, and in others have assumed the dark penciling peculiar to the older birds. When it parts with its down it gradually assumes its first black feathers, but often retains a few white nest feathers, until almost fully grown. Whilst losing their down there comes a time when they are not attractive looking, but the appearance of the plumage during this stage depends greatly on circumstances, the shelter and care afforded them, the food with which they are supplied, etc. When they have donned their first black coat they have much the appearance of young turkeys, and it is not until they are about five months old that the cockerels and pullets give indication of their future grandeur; every day finds them increasing in size and beauty. Mrs. R. W. Sargent, of Kittery, York Co., Maine, to whom we are indebted for the illustration presented, makes a specialty of the Langshans, and all wishing to procure this desirable breed of fowls should communicate with her.

Value of Bones.—Poultry breeders do not seem to appreciate the great value of bones for their fowls, and but a limited few ever make use of them for this purpose. No matter whether the birds are confined or not, they are sure to be benefited by a moderate quantity of bones, though those that are kept in close confinement need them most. Nearly every family of any size has refuse bones enough from the kitchen to afford the poultry quite a treat from time to time, and when this is not the case, or when the supply runs short, enough can be procured each week from the nearest butcher at a very small price, many butchers being glad to give them away to get rid of them. These can be crushed by using a large stone and a heavy hammer, though there is now a very good and cheap mill made for the purpose —costing but five dollars without legs, and seven dollars with legs—which pays for itself several times over during the season, where large flocks are kept, as it not only grinds and crushes bones, but also oyster shells, corn, etc. The bones crush best when dry, and should be reduced to about the size of a small pea.

Silver Spangled Hamburghs.—A great characteristic of all of the Hamburgh varieties of fowls is their superiority as egg producers. They are by many called the Everlasting Layers. The Silver Spangled is the most popular of all. They are spangled, the body of each feather white, tipped with black. The contrast renders them exceedingly handsome.

They have the rose comb, which lays snugly to the head, and is seldom touched by the frost. The ear lobes are white, the outlines distinctly marked from the side of the red face.

They are practically non-sitters. It is a very rare thing for one to want to sit; laying during most of the year with the exception of the moulting season. It is unnecessary even to feed them with special reference to in-

Silver Spangled Hamburghs.

ducing them to lay. As to numbers of eggs, they will do better even than the famous White or Brown Leghorns, but their eggs are not as large. They bear confinement well, but should be provided with green food and a change during such times, the same as other fowls. They are proud and active, with small bodies, very trim, which, with the bright distinct markings of the plumage, make it one of the handsomest in a flock around the house and yard. I have, by selecting, produced one of the finest flocks of this variety, famous for its beauty and utility, and have found them to be one of the choicest breeds of domestic poultry.

I am also breeding White and Brown Leghorns, Light Brahmas, Laced Wyandottes and White Wyandottes. I send my illustrated circular to any address on receipt of two-cent stamp.

G. M. T. JOHNSON, Binghamton, N. Y.

Management of Ducks.—"Any calculation as to the return to be expected by those who keep ducks," says an experienced breeder, "depends entirely upon the possession of a suitable locality. They are most likely to be kept with profit when access is allowed them to an adjoining marsh, where they are able in a great measure to provide for themselves; for if wholly dependent on the breeder for their living, they have such ravenous appetites that they would soon, to use an emphatic phrase, 'eat their heads off.'" No description of poultry, in fact, will devour so much, or feed so greedy. The excursions allowed them must be limited to a short distance, for otherwise they will gradually learn to absent themselves altogether, and acquire rather wild habits, so that when they are required to be put up for feeding or immediate sale, they are often found missing, and difficult to find.

Ducks, too early allowed their liberty on large pieces of water, are exposed to so many enemies, both by land and water, that few reach their maturity; and, even if some are thus fortunate, they are not disposed afterward to return to the farm-yard and submit quietly to regular habits. They may be kept in health in small enclosures, by a good system of management, though we fear, with very little, if any, profit, which is the point to which all our advice must tend. There is no doubt that ducks may be made profitable as egg producers, but the quality of their eggs, and the extra labor required to obtain them (for, unless they are got up every night and confined, they will drop their eggs carelessly here and there, where many of them will not be found), will not allow them to compete with the hen, in that capacity. Also, a duck lays when eggs are most plentiful, while hens' eggs may be procured at all seasons.

The best mode of rearing ducklings depends very much on the situation in which they are hatched. On hatching, there is no necessity of taking away any of the brood, unless some accident should happen; and, having hatched, let the duck retain her young upon the nest her own time. On her moving with her brood, prepare a coop and pen upon the short grass, if the weather be fine, or under shelter, if stormy. Keep a wide and shallow dish of water near by them, and renew the water quite often. Their first food should be crumbs of bread, moistened with milk; curds, or eggs boiled hard and chopped fine, are also relished by, and are good for them. After a few days, Indian meal, boiled and mixed with milk, and if boiled potatoes, mashed, be added, all the better. All kinds of sopped food, buckwheat flour, barley meal and water, mixed thin, worms, etc., suit them. They are extremely fond of angle-worms, grubs, and bugs of all kinds; for which reason it may be useful to allow them a daily run in the garden. All the different substances mentioned agree with young ducks, who show, from their most tender age, a voracity which they always retain. It is necessary, to prevent accidents, to take care that the ducklings come regularly home every evening, and precautions must be taken before they are allowed to mingle with the old ducks, lest the latter should ill-treat and kill them, though ducks are by no means so quarrelsome and jealous of new comers as common fowls always are.

We have not bred any ducks for a number of years, but some of our experience with them is as follows: In 1878, we tried the experiment of rearing ducks without having the water facilities which many consider necessary to make the undertaking successful. We bought of the Aylesbury variety, one drake and three ducks, in the fore part of February, placed them in our back yard, and let them run with the rest of the fowls; fed

them regularly three times a day, and kept placed for their convenience at all times, an eight-quart basin full of water. We did not coop them with our other fowls; understanding they would do better in dark coops or roosts, we therefore made for them two tight, tent coops of rough boards, with small, open doorways in front, in the most secluded place we could find in the yard, between a couple of trees, and surrounded with shrubbery. The three ducks commenced laying about the last of February, and continued laying pretty regularly until the latter part of August, or first of September.

Houdans.

In April, we set a hen on thirteen duck's eggs, which brought off twelve young ducks. We did not set any ducks, but continued to use hens for that purpose, and at the close of the season were rewarded with a flock of sixty-eight young ducklings, which brought in the fall, when well fattened, an average of $1.50 per pair, saying nothing of the large number of eggs used for culinary purposes. In rearing young ducks with hens, we placed near the coops, which were always located in the vicinity of the pump, a small pan or water-tight box, sunk in the ground to receive the waste water from the pump, which answered the purpose as well as if they were given a pond

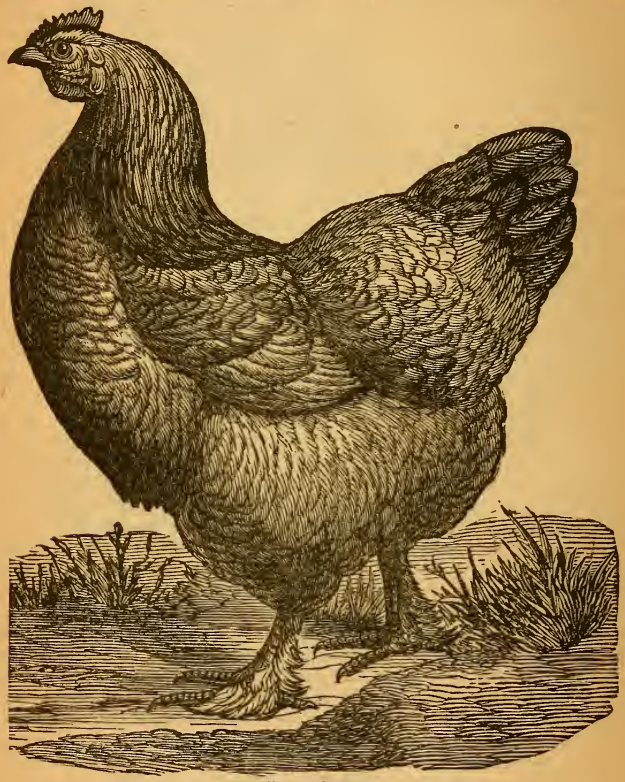
of water to swim in, and fretted the hen mother much less. In fattening them, we gave them plenty of boiled potatoes, mixed with cooked Indian meal, made into a pudding. We fed but little corn or oats. They paid us well for all our trouble and expense, as they doubtless would if the experiment were tried on a larger scale.—*The American Rural Home.*

Houdans.—The Houdan is one of the most beautiful varieties of fowls, and nothing is more imposing than a yard full of Houdans; but its merits far exceed its beauty. Besides the lightness of its bones and the quantity and delicacy of its flesh, it is a variety to be admired for its early productiveness and fecundity. The chickens in four months can be fattened, and acquire great size. This breed produces very fine chickens, and, of all varieties, the hen approaches in weight nearest to that of the cock. They are precocious, and abundant layers of a fine white egg. The pullets begin to lay in the month of January. The variety is a farmer's fowl, and is more easily raised than any other of the French variety. In disposition it is also less roaming.

Spring Breeding of Poultry.—An English correspondent of the *Country Gentleman* thus expresses himself: Where it is intended to produce early chickens for market or for home use, there should be a lot of stock birds for that purpose separate from those which are to produce the layers and breeders. In nearly all countries the breeding of early chickens is about the most profitable part of poultry keeping. The prices which can be realized the first four months of the year leave a large margin to the producer, and where the farm is suited from its position and soil to early breeding, and there is a good market for the fowls within reach, this is a work that we should recommend the breeder to go in for. He may hatch from pullets' eggs if that be necessary, as it most probably will, for though the chicks will not be so hardy as would be those from hens' eggs, yet as they are to be killed off, no harm will be done. The birds will be fed up at the right time, and whatever weakness may be in them will not be transmitted to any other than themselves. To secure the chickens being ready in time, they should be hatched in November and December. The former will be ready for market in February, the latter in March or April, these being the best months of the year, so far as prices are concerned. This set of breeding pens may be broken up in December, unless a few more chicks are to be bred in January, and the ground may, after a short rest, be occupied by the regular breeding stock, which need not be mated until the middle or end of January. It is most desirable that the birds which have laid eggs for the production of the early chickens should not be relied upon for those from which the stock breeders and layers are to be obtained. In the case of pullets especially, the strain upon the system from the production of so many eggs will have weakened them, and this would be injurious to the later progeny. These, if of a sitting variety, may be used for that purpose, as they become broody, and this will give them a much needed rest. But if non-sitters, they may be rested by the discouragement of laying for a time. The plan here recommended will be found best suited to the production of healthy, strong, large fowls. I do not wish my meaning to be mistaken. I believe in early breeding, *i. e.*, early in the year, so as to get the hens to lay before the winter sets in, which they will not do if allowed to hatch late; but I do not believe in the production of stock birds at an unseasonable period of the year, and from pullets.

February is early to set eggs, but not too early. April—the month when most farm hens in this country, if not well attended to, begin to sit—is getting late, and May is, under ordinary circumstances, *too* late.

Buff Cochins.—This variety of fowl is now very popular in England. The Buff Cochins are the real Shanghais. The color of the hen is: Comb, face, deaf ear, and wattles, brilliant red; plumage, uniform, clear, deep buff throughout—the more uniformly clear and free from mottling or shad-



Buff Cochin Hen.

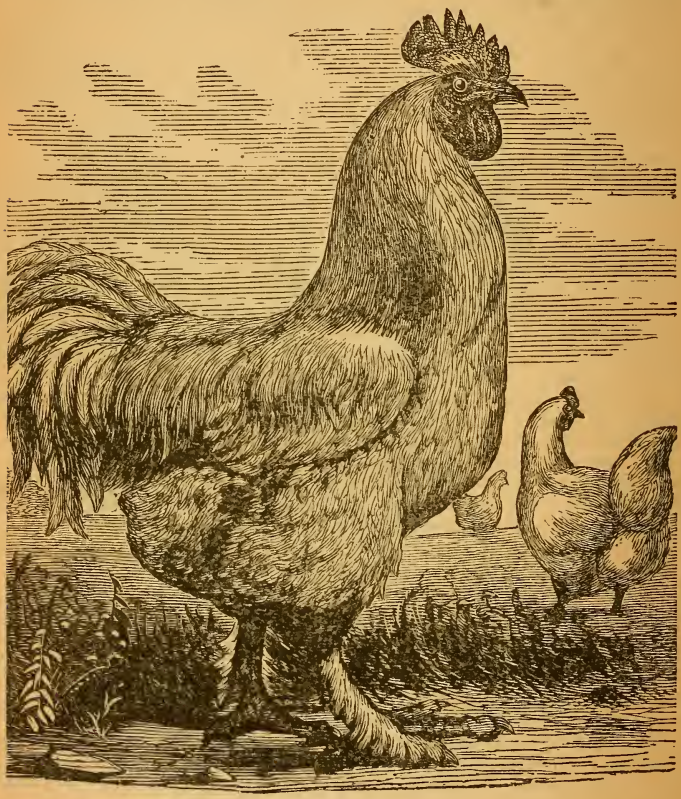
ing the better; a clear hackle preferred, but a slight marking at the end of the feathers of the neck not a disqualification; legs bright yellow, with feathers the same color as body feathers.

The Hens for Farmers.—If a farmer keeps hens chiefly for the purpose of supplying his own table with meat and eggs, he will do well to raise birds that belong to one of the large breeds. The choice will lie between the Brahmas, the Cochins, and the Plymouth Rocks. There are no objec-

tions against any of these breeds. The light Brahmas have been most favorably known for over thirty years, and for general merit they are not surpassed by any of the newer breeds. The light Brahma fowl meets every requirement of the farmer. It is a very handsome bird, and it is an ornament to the premises. It is a contented, home-loving bird, not inclined to wander about and get into mischief. It is a large bird, and furnishes a fine roast. If its flesh is not quite as tender or delicious as that of some of the French fowls, it is at least very good. A Brahma fowl is easily dressed, and when plucked presents a fine appearance. The eggs of the Brahma are large and well formed. Though they bring no more in the market than small eggs, they are of much greater value, as their size and weight indicate. Brahma hens of suitable age, if they have warm quarters, will lay during the entire winter. They are patient sitters and good mothers. They are not as greatly addicted to scratching and making havoc in the garden as fowls belonging to the smaller and more active breeds. Being heavy, they never attempt to make long flights. They can, if it is desired, be kept in an ordinary farm-yard without making any additions to the fence. They do not suffer when kept in partial confinement. They will thrive, gain in weight, and produce eggs when kept in a yard or building, provided they are supplied with suitable food, water, and materials for forming the shells of eggs. If Brahma fowls are not the favorites of breeders, the cause may be found in the circumstance that they are no longer novelties. Breeders, like nurserymen, prefer to raise and sell new things. They can obtain higher prices for them, as they are desired by amateurs, while they have little competition. Light Brahma fowls are now well distributed throughout the country. Birds of pure strains or their eggs can be obtained at comparatively low prices. It is to the advantage of farmers who have nothing but mongrels on their places to obtain a supply of them. Many farmers think that they cannot afford to keep animals of pure blood. They acknowledge their superior value, but they have not the money to purchase them. Very few farmers are so short of means that they cannot raise money enough to pay for a sitting of eggs. It takes several years to raise a flock of improved sheep or a herd of pedigree cattle. But a flock of fowls of pure blood can be secured in one year at the expense of a few dollars. These fowls will be conducive to pleasure as well as profit. It will cost no more to keep them than an equal number of common fowls, whose flesh and eggs are greatly inferior. The farmer in any town who makes the first start in keeping superior fowls can generally make money in selling birds or their eggs to the neighbors. If one farmer makes a new departure in keeping fowls, his neighbors generally follow his example, and in most cases they will purchase breeding stock from him. Eggs of light Brahma hens obtained very early in the season will produce chickens that will lay eggs during the next winter. Few farmers who have kept superior fowls a few years are dissatisfied with the result, or are willing afterward to raise common barn-yard chickens.

Keeping the Breast Bones Straight.—It is a well known fact that the heavier breeds of domestic poultry, like the Brahmas and Cochins, and especially the light Brahmas, are frequently much injured by roosting on small or ill-contrived roosts or roosting benches, causing a curvature of the breast bone, when the birds are young and the bones very soft, tender, and pliable. This deformity, while it does not show the bad defects in breeding from such deformed birds, is an eyesore, and detracts consider-

ably from the selling value of the bird, no matter how fine a specimen of the breed it may otherwise be. To remedy, in some measure, this tendency or irregularity, some of our breeders use very low roosting benches, in place of the high roosts of the old-style pattern. These benches are made with broad, rounding strips for the birds to rest on and cling to, and this generally prevents the bones of the breast from becoming deformed. The young of the Asiatics (Brahmas and Cochins) are, when young, very weak



White Cochins.

in the legs, causing them, when on the roost, to bear most of the weight on the roosting pole or strip directly on the breast bone, to relieve the strain on the legs If the roosting poles are small or have sharp edges, it is sure to become painfully apparent in the curvature of the breast bones of the young birds, and to avoid it the roosts must be broad and rounded—say a 2¼ inch strip, rounded on the upper side. This will be found about right. To avoid all possibility of trouble from curvature of the breast bones,

quite a number of Brahma and Cochin breeders now do away with the roosts altogether for their immature and growing young stock, and bed the birds down with straw, the same as is done with cattle, etc., and in some cases with ducks and geese. The young chicks soon get to understand how to use their "low roosts," and gather in on the straw every night as regularly and as orderly as do cattle or sheep.

While this bedding down is a good thing, when properly managed, it must be removed and well aired each morning, and the house swept out. Just before roosting time, the straw is nicely spread in place again for the accommodation of the birds, and the same thing is repeated daily while the birds use this method of sleeping, which they are generally compelled to do until they have become fully matured, and the breast bones thoroughly hardened by age and maturity.

White Cochins.—We give an illustration of a White Cochin cock. Cochins of this color possess the same characteristics as the other colored varieties of this breed of fowls, and should be in build, or general shape and action, similar to the Lemon, Buff, Cinnamon, Grouse, or other colored birds of this variety. However, the White Cochin cock and hen should have comb, face, deaf ear, and wattles of a brilliant red color; plumage, pure white throughout; the cock as free from yellow tinge as possible; legs, light yellow. Other colors are considered a disqualification in show birds.

Plenty of Eggs in Cold Weather.—There is a farmer living about two miles from Waterloo, writes E. J. Taylor in the *American Rural Home*, who has many eggs to sell, and at times when they are the highest in price. I met this farmer a few days ago, and asked him how he managed to have so many eggs to take to market when he wanted them the most; he replied that it was his wife's doings, and gave me a hearty invitation to visit the old lady, saying that, as she was as proud of her poultry as he was of his pigs, she would talk all day about them gladly. I promised to accept his invitation, as I felt quite well acquainted with his wife, having sold her a fine breeding pen of Plymouth Rocks some three years ago, and she now has a large flock of this splendid variety of fowl, which she is very particular to keep strictly pure, and it pays her well to do so, for in the course of a season she sells many a setting of eggs for hatching, and occasionally a trio of fowls, for prices far better than she could obtain in market. So I went out to their place last week, had a good dinner, and a long talk. The old lady's ideas are partly reproduced from my notebook, and partly from memory, in as nearly her own language as possible, and I think they are worthy of attention.

Some of her ideas are decidedly original to say the least. She said to me: "'How do I make my hens lay so well in cold weather?' Well, now, the best way is to feed 'em. Keep Lent yourself, if you want to, but don't make them fast with you. Corn and oats and scraps are all very well to fit your fowls for the table; but if you want eggs, you must give your hens meat. That makes you open your eyes, but it's true, and it's I, who have had most eggs to sell when they brought the most, year after year, who tell you so. Give 'em meat cut in small bits, so they can handle it easily; cooked meat, or they will fight. Drop it on clean gravel if you have it, if not, then scatter it 'round a clean floor, such as a barn or corn-house floor. Don't give it to 'em in a basin; if they haven't had any for some time, they gobble it down as children do mince pie, and make pigs of themselves; but

scatter it 'round so they will find it as they do worms, and grasshoppers, and things in summer; and then they'll give you eggs, that is, if they are well when you commence. But if they are sickly, if their blood is out of order, you must physic 'em and get 'em well before you commence on high feed. Salts is the thing—Epsom salts. I've used it every spring for five years, and the woman that told me of it had used it for twenty. I don't suppose it makes much difference how it's done. I've had various ways, and have settled down on this way: After I have taken my corned beef and vegetables out of the pot, on a day when I have boiled dinner, I just set the pot on the back of the stove, and put into the liquor a teaspoonful for every sick hen I had; then I stir in bran, shorts, mill-feed, or any or all of such stuff as I happen to have, till the whole is as thick as hasty pudding; then I give it a good sprinkling of red pepper, or, if I have 'em, put in a few red pepper pods, and let it stand and stew awhile, being careful not to let it burn. Then I give it all a fresh stir, and then put it on a clean board, and put it where the hens can get it. Then the hens show their good sense. The well ones go to it, poke at it with their bills, squall, wipe their bills clean and leave it. But the sick ones, those with scabby legs, bare breasts, light combs, the logy, scrawny-looking things, they relish it; they pick a bit and then go for gravel, then come back and take another taste, and then take a sip of water, and hang 'round the board till they have had enough, or it is all gone. By the way, I always have clean drinking water, with the chill taken off, handy for the hens to drink, when I physic 'em. Don't be afraid they will take too much of the medicine; unless you put corn or some tempting feed in it, there is no danger. You put the salts in this mess just as you put pills in jelly for your baby to take. In two or three days after they have their medicine, they will be ravenous; then they, like the rest of your fowls, should have meat. But don't let them have too much at one time, or in one place; scatter it around; make 'em hunt for it and work for it. One of the best ways to feed meat to hens is to give them a bone to pick; I often boil a sheep's head and make John crack the bones with his axe, and throw it into the hen-yard. How they do enjoy it! and they do lay after it! Yes, I always try to give cooked meat to my hens. According to my notion, raw meat makes them wild and quarrelsome, also makes 'em steal their nests; but if I cook it for 'em they get tamer, more domestic, don't fight, go around singing quiet as can be, get lazy, lay lots of eggs, because they feel contented and happy, I suppose, and want to show their gratitude in some way, or maybe they lay because they can't help it."

White Leghorns.—This breed of fowls is scarcely known in England, but is highly prized in America. They are bred of nearly all colors save black. They are a very hardy bird and extremely good layers, and seldom desire to sit. The young are easy to rear; they feather up soon, and at the age of six or eight weeks are miniature cocks and hens. They lay a smaller egg than the Spanish, but mature earlier, and are superior for the table. The cocks have large single combs, which should stand perfectly erect. The carriage of both cock and hen is proud and dignified. This fowl is a great and valuable acquisition to the poultry yard.

A correspondent of the *Live Stock Record* writes: "As egg-producers, I believe the Leghorns stand at the head of all breeds. There are breeds that, it is claimed, are better layers than the Leghorns, but if you will give this breed a good warm house and good care, I don't think you will find

any breed that will beat them—at least that is my experience. They must have a warmer house than some other breeds, because of their large combs and wattles, which are more liable to freeze than those of fowls with smaller combs. Some claim that the Leghorns are too small; it is true they are small, but what of that?

"The same food that would raise a Brahma from a chick up to weigh eight pounds would, I honestly believe, raise three Leghorns to weigh four pounds each; and if you are raising them for early chicks for broilers, the Leghorns, hatched the same time with the Brahmas, will be feathered out,

White Leghorns.

sold, and eaten before the Brahmas fairly realize that, to look well, their bodies should be covered with feathers.

"Another reason why I like Leghorns is, the pullets begin laying very young. My first chicks last season were hatched April 21st, and the pullets began laying in August. Leghorns generally lay a pure white egg, but there are exceptions; the best hen I had last year laid eggs nearly as dark in color as those of a Plymouth Rock or Brahma.

"I had two gardens last summer, one each side of my poultry-house, and neither of them more than twelve rods distant. Neither of these gar-

dens were picketed in, and my hens did not bother a thing in either until the tomatoes were more than half ripe; but my hens were fed all summer.

"I believe it pays to keep hens, and I just as much believe that it pays to feed them. If, after grass got a start in the spring, we had taken the feed away from our hens and told them to shift for themselves, they would undoubtedly have done so, and very likely would have shitted some for us in the garden besides."

How to Preserve Eggs.—There are a great many methods suggested for this purpose, and we will give not only the plan we pursue, but the experience of others. The best of all preservatives is sulphur, but as sulphur will not dissolve in water we convert it into a gas by combining it with oxygen, forming what is known as sulphurous acid gas (not sulphuric), which is done by simply burning it. In order to test an experiment take one dozen eggs and break one every month, which will enable you to know exactly how long they will keep under any process. We will say this much in the beginning, however, which is, that eggs so packed in a box as to permit them to be turned over daily will keep twice as long as those not treated. By packing them in a box with oats as a filling, and then turning the box upside down, a large number can be turned at once. Another point is that eggs from hens that are confined in yards without the companionship of cocks keep better than under the reverse conditions, or rather, infertile eggs keep better than those that are fertile. Supposing the reader intends to try one dozen eggs as an experiment, one of which is to be broken each month for a year (of course a larger number may be used if preferred), we will give

The Sulphur Process.—Take a common starch box with a sliding lid. Put the eggs in the box, and upon an oyster shell or other suitable substance, place a teaspoonful of sulphur. Set fire to the sulphur, and when the fumes begin to rise briskly, shut up the lid, making the box tight, and do not disturb it for half an hour. Now take out the eggs, pack in oats, and the job is done. If the oats or packing material be subjected to the same process it will be all the better. If a barrel full is to be preserved, place the eggs in a tight barrel two-thirds full, with no packing whatever. Fire a pound of sulphur upon a suitable substance, on top of the eggs in the vacant space over them, shut up tightly, let stand an hour, and then take out the eggs. As the gas is much heavier than the air it will sink to the bottom, or, rather, fill up the barrel with the fumes. In another barrel or box place some oats, and treat in the same way. Now pack the eggs in the oats, head up the barrel, turn the barrel every day to prevent falling of the yelks, using each end alternately, and they will keep a year; or, according to the efficiency of the operation, a shorter, or even a longer time.

It will be seen by the above that the process is a dry and neat one, and very inexpensive, sulphur being a very cheap article. The process was sold several years ago by certain parties in Cincinnati as "Ozone," but it is an old one, and the parties were exposed, not that the process was a fraud, but because they sold a pound of sulphur for $2 as ozone. It had also previously been published in the *Farmers' Magazine* years before. To show the wonderful preserving qualities of sulphur our readers may try a quicker process, by way of experiment, thus:

Take a piece of fresh beef, a fish, or anything that will quickly decay. Place at one end of a close box and burn a little sulphur at the other end. The beef or fish will absorb the sulphur fumes. Keep the box closed half

an hour, then take out the beef or fish, hang it up somewhere (cellar, out of doors, or anywhere), and our word for it that you can let it hang up a year without the slightest odor or sign of decay. The first three days there will be a slight odor of sulphur, which passes away. The meat may dry up gradually, but will not spoil. If placed in a pot the boiling water at once disengages the sulphur, and it passes off. It is perfectly harmless. In fact it is best to treat all the meats used in the family in that manner, even when wanted for immediate use, as the meat, even if from diseased animals, will be purified from disease germs. Remember this when the cholera comes.

We are stepping aside from the matter of preserving eggs, but excuse us for telling you how to preserve fruit also:

All substances, such as meats, fish, eggs, etc., are preserved with the sulphur without water. If you wish to preserve peaches, tomatoes, or other fruits and vegetables, do it in this way: Take, say peaches, and put the peaches in one end of a box, and a wide bowl of water at the other end. Burn the sulphur as before. Water absorbs sulphur gas rapidly, and the bacteria are destroyed. In the meanwhile the peaches will also absorb it. Shut up the box, keep it closed fifteen minutes, then repeat the process, allowing the box to remain closed for the same length of time. Now place the peaches in a jar, pour the sulphurized water over them, tie a piece of paper over the top to keep out the dust (no sealing is necessary), and your peaches will keep till the next crop comes, and even longer.

Do not forget that it will only cost you a few cents to try the process above. Do not take our word, "prove all things." We have tried it, and our readers should do so. It is worth $10 to any family. Fruit is not affected by the gas, and with the exception of a partial absorption of water, may be had thereby in the natural condition, though a few highly colored berries (such as blackberries), may be bleached a little.

Cider may be kept sweet for years by burning sulphur on a floating piece of wood on top of it, and dried fruit may be made white, and will keep better from its use. A corpse may be kept a year by the dry process, and the clothes of small-pox, yellow fever, or cholera patients may be worn with impunity after being submitted to the process. All forms of fermentation, germs of disease, bacteria, or invisible organisms yield to its power, and if the water which has been used to absorb gas be used as a gargle, or drank, it will be found a splendid specific for diphtheria, or other contagious diseases, besides being excellent in cases of roup and cholera in fowls. Its wonderful powers of preservation entitle it to be named the destroyer of diseases, for decay and putrefaction are the same as diseases. Should you have any difficulty burning sulphur, melt it in a small pot or crucible, and then draw a wick of a lamp through it. When wanted for use cut off a piece of the wick. The reason why sulphur does not burn freely at times is because it melts and smothers the flame. Here is another process, the invention of J. M. Bain. We have not tried it, but it is well known as

The Havana Process.—Take twenty-four gallons of water, put it in twelve pounds of unslacked lime and four pounds of salt. Stir it well several times a day, and then let it stand and settle until perfectly clear. Then draw off twenty gallons of the clear lime and salt water. By putting a spigot in the barrel about four inches from the bottom you can draw off the clear water and leave the settlings. Then take five ounces baking soda, five ounces cream of tartar, five ounces saltpetre, five ounces borax and one ounce alum; pulverize these, and dissolve in a gallon of boiling water,

which should be poured into your twenty gallons lime water. This will fill a whiskey barrel about half full, and the barrel holds about 150 dozen eggs. Let the water stand one inch above the eggs. Cover with an old cloth, and put a bucket of the settlings over it. Do not let the cloth hang over the barrel. After being in the liquid thirty days the eggs may be taken out and packed in boxes and shipped. Do not use the same pickle but one. You need not wait to get a barrel full, but put in the eggs at any time. As the water evaporates add more, as the eggs must always be covered with the liquid. It does not hurt the eggs to remain in the pickle. It is claimed that this process will keep them a year.

The next is one that we believe to be excellent, and as a credit to the source from which we obtained it, we term it

The Scientific American Process.—Having filled a clean keg or barrel with fresh eggs, cover the eggs with cold salicylic water. The eggs must be kept down by a few small boards floating on the water, and the whole covered with cloth to keep out dust. If set in a cool place the eggs so packed will keep fresh for months, but they must be used as soon as taken out of the brine. To make the salicylic solution, dissolve salicylic acid (the cost of which is trifling), in boiling water, one teaspoonful of acid to the gallon. It is not necessary to boil all the water, as the acid will dissolve in a less quantity, and the rest may be added to the solution cold. The solution, or brine, should at no time come in contact with any metal. In a clean, airy cellar one brine is sufficient for three months or more; otherwise it should be renewed oftener. For that purpose the kegs, etc., should have a wooden spigot to draw off liquid and replenish the vessel. Butter kneaded in the same solution and packed tight in clean stone jars will keep fresh the whole winter, but must be covered with muslin saturated in the water, renewing it sometimes. Cover the jars with blotting paper saturated with glycerine. Salicylic acid is harmless, and yet one of the best and certainly most pleasant disinfectants in existence, with no color nor taste. The water is an excellent tooth wash, and the best gargle to prevent diphtheritic contagion.

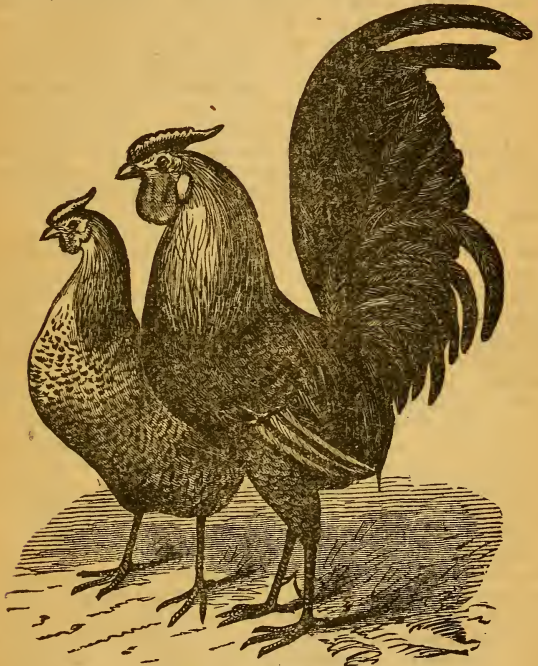
The different processes below are taken from the journals mentioned in the titles:

The Poultry Messenger Process.—Eggs will soon become cheap comparatively, and methods for keeping them will be inquired for. Smearing the shells with linseed oil is reported to be a good way. Rub the oil over the egg with the tip of the finger, and suffer it to become dry on the shell. Eggs rubbed over with flaxseed oil in three months lost four per cent., and in six months four and a half per cent. of their weight, and when opened were found to be fresh, with the smell of fresh eggs. Eggs not so treated lost eleven per cent. of their weight in three months, and in six months thirteen per cent.

The New England Farmer Process.—The plan of a French chemist for preserving eggs is as follows: While quite fresh they are gently struck against each other to see if they be "sound;" next they are placed in a kind of earthen pitcher having a very narrow bottom. When the vessel is full, a solution of a quarter of an ounce of quick lime to one quart of water is poured in. The lime water permeates the shell till it reaches the first membrane, rendering the latter impervious. The pitchers are then placed in a cellar from which all light is excluded, but a uniform temperature of 44° to 46° Fahr. is maintained. In the course of a few days a pellicle forms on the surface of the water in each pitcher (carbonate of lime), and that

must never be broken till the moment for withdrawing the eggs. This process enables the eggs to be kept fresh for six or eight months, and not more than five in a thousand prove objectionable.—*Poultry Keeper.*

Golden Penciled Hamburghs.—The Penciled Hamburghs are very minutely and beautifully marked. The cocks do not exhibit the pencilings. They should have bright, double combs, which are firmly fixed upon the head, ending in a point which turns upward, well defined deaf ears, taper blue legs, and ample tails. The carriage of the cock is gay and majestic; his shape is symmetrical. The hens should have the body clearly penciled



Golden Penciled Hamburghs.

across with several bars of black, and the hackle in both sexes should be free from dark marks. These birds are imported in large numbers from Holland and England, from whence we derive the breed.

There's Money in Ducks.—How much will it cost to raise a duck to eight weeks old? is the question I have asked parties who have been in the business for years. Most of them say 25 cents, some 20 cents, and a very few 30 cents. Now, I thought I would try a little experiment and satisfy myself, as to just what it would cost to raise a duck to the age of eight weeks, at which age those engaged in the dressing of ducks for the Boston markets will buy them. I purchased 425 common mixed ducks' eggs, from

different parties. These were put in the Monarch incubator, June 1. They were tested in one week, and a good many infertile ones were found, reducing the number to 340. There were hatched from these 323 live ducks, some of which being weak, soon died. They were put in two broods, and had artificial heat just ten days; none died after they were six days old. I raised nearly 300 of them, and at the age of eight weeks they were sold to the carts. These ducks were confined to small yards, and could get nothing to eat except what was given to them. They were fed on corn meal, fine feed, and ground beef scraps, and the last two weeks some cracked corn. Ground oyster shells were kept by them all the time. The cost of feed and oil used in hatching was 11¼ cents each. These ducks were not stinted in feed, being quite fat when sold. The price paid for meal was 62 cents per bushel, fine feed, $1.20 per cwt., and $2.25 per cwt. for scraps. Now these parties that I talked with about raising ducks allow them to run in pastures, where a portion of their feed is picked up, and they can raise a duck for 2 cents less than I did, the price of grain being the same. I have 50 nice Pekin ducks now, and shall be prepared another season to raise a better quality of young ducks for market. I feed the laying ducks the same as I do the laying hens.—*R. G. Buffington, Bristol County, Mass., in Farm and Home.*

Boiled Grain for Fattening Fowls.—It has long been a custom with French poultry raisers to cook the grain fed to fattening fowls. This is done by boiling it in water until soft enough to be easily bruised between the fingers. At this stage the grain has swollen so that the farina, splitting the membrane which surrounds it, gives it a bursted appearance. Poultry feeders generally know that fowls prefer the cooked grains to dry food, and that they thrive better and fatten quicker upon it. There is also a decided gain in the bulk of food treated in this way, and its nutritive value is increased, as the following shows:

Four pints of oats boiled will fill a pint measure seven times.
Four pints of barley boiled will fill a pint measure ten times.
Four pints of buckwheat boiled will fill a pint measure fourteen times.
Four pints of maize boiled will fill a pint measure fifteen times.
Four pints of wheat boiled will fill a pint measure ten times.
Four pints of rye boiled will fill a pint measure fifteen times.

Rice increases in bulk considerably more than either of the six grains mentioned above. It is fed more to fowls now than formerly, as it is generally believed that it tends to whiten the meat. Some poultry men claim that no saving is made in boiling the food, notwithstanding its increase in bulk, as there seems to be a corresponding lessening of its sufficing properties; that seven pints of boiled oats will be consumed in the same time and by the same number of fowls as four pints of the dry grain. On these "pints" we shall be pleased to have the experience of our readers. Doubtless most of them will agree that a partial diet of cooked food is best for fowls, even though it effects no perceptible saving in the amount it takes to produce given results. It occurs to us that even admitting that it takes no less of the cooked, if the fowls fatten quicker and thrive better, it is a matter of economy to use the boiled rather than the dry grain.

White Shanghaes.—The plumage of this variety of fowls is entirely white, with the legs usually feathered, and differs in no material respect from the red, yellow, and Dominique, except in color. The legs are yellowish,

or reddish-yellow. Many prefer them to all others. Being more quiet in their habits, and less inclined to ramble, the hens are invaluable as incubators and nurse; and the mildness of their disposition makes them excellent foster-mothers, as they never injure the chickens belonging to other hens. These fowls will rank among the largest coming from China, and are very

White Shanghaes.

thrifty in our climate. A cock of this variety attained a weight of eight pounds, at about the age of eight months.

Sod Houses for Chickens.—The sod house is a great convenience in regions where timber and sawmills are scarce. It is very handy even in other places. In frozen-up localities every foot which is dug down into the earth increases the warmth. Where warmth and light can at once be se-

cured in underground houses, therefore, a great problem is solved. A lady, Mrs. Lincoln, has solved it in the case of sod poultry houses. She describes in *The Rural New Yorker* the house she has made. She says: The best winter-laying my hens ever did was when they lived in a "sod house." A pen was built and a door frame was set into it on the most sheltered side and sods built over and around it, making the foundation about three feet broad. Earth was liberally heaped over all, and a ventilating tube, 8x10 inches, was set in the top like a chimney.

The most successful cheap contrivance ever used for saving the little pitiful chicks is a hole dug in the ground, not over eight inches deep. A box, with an opening on the most sheltered side, is set into the hole, and the entire thing is snugly banked up with earth. Make a long, sloping opening in front. Put one brood in each place of the kind, and feed with screenings and crumbs from the table, and see how well it pays. If you give them drink enough they will not be stunted in size. An old salt barrel, sawed in halves, or, for small fowls, even a nail keg, laid on its side in the hole and banked up, or with sods built up around it, will answer well.

Crop-Bound Fowls.—I take a sharp knife, open crop near the top, cutting a slit about one inch long, through both outer and inner skins. I now remove contents of crop through opening thus made, and wash out the inside of the crop with tepid water. I now inclose the inside of crop skin, and sew it up with surgeon's silk, then close and sew up the outside skin and apply a little fresh lard. I keep the fowl in a warm, dry place, and feed it with soft food for one week and give very little water for three or four days. In two weeks the fowl will be as well as ever.

A few weeks ago I performed the above operation on a chick four weeks old. He got better right away, and is now a beautiful bird. About ten days ago I operated on an old hen, but she was too far gone and died. I believe almost all might be saved if the operation was performed before the system was too much run down, as was the case with my last patient.—*Poultry Keeper.*

La Fleche Fowls.—We give an engraving of a pair of La Fleche fowls. We do not deem them a fowl that can be reared with any safety or satisfaction in any climate but a southern one. In appearance the La Fleche breed resembles the Spanish, from which we believe it to have been at least partly derived. Both sexes have a large, long body, standing on long and powerful legs, and always weighing more than it appears, on account of the dense and close-fitting plumage. The legs are slate color, turning with age to a leaden-gray. The plumage is a dense black. The look of the head is peculiar, the comb being two-horned. The wattles are long, of a brilliant red color, like the comb. The ear-lobes are dead white. In fact, no breed could show stronger traces of its Spanish origin.

Profitable Experience in Poultry Raising.—To show how poultry raising may be made as profitable perhaps as labor in the workshop, writes a farmer, here are the details of what the wife of a small farmer in my neighborhood is doing:

She wintered thirty-seven hens and two roosters; and during this time the flock laid nearly eggs enough to pay the cost of their food. Early in March she began setting the hens as fast as they brooded.

By the middle of May she had 141 chickens, and had only lost two. She is going to keep on setting hens until July, when she will probably have at

least 300 chickens. In June the earliest will be two-and-a-half to three months old, plump and suitable for broilers. For them she will obtain a high

La Fleche Fowls.

price. As the summer advances, prices will gradually fall, but even through autumn chickens pay a fair profit, and during the whole time she will be selling eggs, perhaps enough to pay for the feed of the flock.

Now, as to the fixtures to carry on this business: There is a cheap, well ventilated poultry house, and old flour barrels with one head taken out chiefly used for nests and for coops. The chickens are weaned when six weeks old, and placed in the barn at night, where they sit safe and warm on the thrashing floor till morning. They are given feed, a drink of skimmed milk, and left to wander around the ground at will. The barn door is left open to the south, so they can go in for feed and drink as often as they desire, and also for shelter if it rains; but as the hens have been let out of their coops since the chickens were a week old, they grow up quite hardy and don't mind a little rain.

The soil here is admirably suited for raising chickens, it being a light gravel, which dries immediately after a rain, and is consequently never muddy.

When setting a hen, a piece of dry turf is cut 12 to 16 inches square, hollowed out a little on the under side, so as to make a corresponding hollow on the upper, to safely hold the eggs. The turf is now laid on the bottom of the coop or barrel, grass side up, and the eggs placed upon it. A little sulphur is sprinkled around the neck of the hen, beginning close to the head, also on her rump and under the wings. This kills lice if she happen to have any. The turf has the advantage of keeping warm while the hen is off to feed, drink, and wallow in the dirt, and it also prevents the egg-shells from getting so hard and dry as to make it difficult for the chickens to pick themselves out. After hatching, the turf is removed and a peck or more of sand or loam is put in to keep it sweet and clean. This is renewed weekly.

Coal Ashes for the Hen-House.—A New Jersey correspondent of the *Prairie Farmer* says: "In the autumn and winter, each morning the ashes and refuse from our stoves, mostly from burned coal, was sifted over the droppings from the roosts. This was a perfect deodorizer, and kept everything clean and sweet. I soon began to notice that the fowls were intently pecking at the small bits of coal or slate, both in the sieve and that which had passed through it. Eventually they became very fond of the diet, evincing as much interest as would be excited by any choice dish set apart for their special delectation. I was sometimes alarmed for the throats as I saw them laboring with the large and ill-formed pieces; but they were always successful in their efforts. I suppose that, besides their beneficial effect as triturants, they exert a good effect from the chemical constituents of the original vegetable matter of which the coal is formed. Suffice it to say, that the flock has thriven and grown more healthy, and the layers have quite distinguished themselves in the production of eggs."

Gray Dorkings.—These fowls are square and compact in form, with short legs, short neck, and heavy breast, giving a greater proportion of desirable flesh to the amount of offal than almost any other fowl. They fatten easily, and this, with the other desirable qualities mentioned, makes them favorites with those who deal in dressed poultry. The Dorking lays well, and makes a good mother. The legs should be straight, short, stout, clean, perfectly free from feathers, spurred on the inside, white, with a flesh-colored tinge between the scales.

Raising Chickens on the Farm.—Last year, writes a correspondent, we tried an experiment with raising chickens, and were so well pleased with the result that we are raising them in the same way this year.

Chickens on a farm are by many condemned, for the reason that they destroy more than they are worth; but I think by the following method that chickens can be raised at a good profit even on a farm:

Last spring my first brood of chickens came off about the last week in April. I took them away from the hen, putting them in a small, dry pen, fitted up with an old blanket, under which they might go when they wanted hovering. I made a small yard for them where they might run in the warm, dry weather, with a spot of green grass, and also spaded up a place for them to wallow in. They lived and seemed to flourish equally as well as

Gray Dorkings.

if under the care of the mother hen. In a week I made an addition to my flock by putting in another brood. These seemed to get along as well if not better than the first brood, for the older ones would serve to keep the younger ones warm on cold nights. I kept adding to my pen until I had fifty-five chickens, all the way from one day to six weeks old.

They were kept confined until the youngest chicks were two weeks old, when I gave them their liberty. They never strayed away from their pen but a short distance, always to be seen about the barnyard or near their pens, and just as happy as if with a hen. I never feed them except in their yard, and when they are hungry there is where you would find them. At night or during a shower they would always be found in their pens, thereby

saving the trouble of hunting all over the farm after them. Not having a mother to lead them off into the grain fields or gardens, they did not tread down the grain or destroy any vegetables. Neither did they get drabbled in the wet grass by following a hen on her morning rounds. Nor did they get far enough away from the trees and buildings to be caught by hawks or prowling foxes or skunks, as some of them certainly would have been if with a hen. We did not lose a chicken by the hawks last summer. Whole number lost, seven, which died, as chickens always will, from no assignable cause, leaving forty-eight sound chickens for market or home consumption. The cost of feeding had been but slight; the bother had been scarcely anything; the time spent had been a real pleasure; the crops destroyed by them were none; the six hens, which if allowed to go with the chicks would have been of no profit, had laid a number of dozen of eggs, and the chickens were larger and in better condition than if they had followed the hens. I think this is the best way to raise chickens on the farm.

Nests for Sitting Hens.—Mistakes are made with the nests of sitting hens. Too many are made that are so small that the hen is unable to perform her duties of sitting down upon and stirring the eggs without smashing one or two. A roomy nest should be supplied—not too large—having a bottom of rather soft material resting on dirt, with a plenty of straw well packed about the sides. Such a nest, especially early in the season, is very desirable, retaining as it does the heat for a much longer time than a carelessly made nest of loose hay in a box. The best receptacle for a nest where one has plenty of room is an ordinary flour barrel. Cut in the side a hole large enough for one hen to pass through, and then hinge a small door to open and shut at pleasure. The advantage of such a nest is that nothing can be more secluded. There are no draughts of cold air sucking through the cracks into the nests. They are easily inspected if not made too deep, and there is ample space for any hen within the barrel. A door prevents the hen from looking out much better than a wire screen. A hen that cannot see all that is going on outside is less restless.—*The Poultry World.*

A Plea for the Hens.—Dr. C. A. Robinson, in the *Planter and Stockman*, puts in a plea for the better care of the poultry yard, as follows:

As we conduct our stock farming, we prepare the very best of homes for our stock, yet never so much as give a thought to the poultry. Every day, as regularly as we eat, we feed our horses and cattle, and take special pains to water them. We slop the hogs as carefully as we feed the horses, yet if a poor chicken, driven by hunger, flies into the hog pen to pick up a few grains of corn, we make a specialty of throwing rocks and clubs at it, and if perchance we kill one, we proceed to devour it for dinner, yet we expect the poultry and eggs to buy our groceries and many other things. We dread to feed the chickens in the winter unless they are continually dropping eggs. We say we can see no profit in feeding hens when they do not pay their way; yet we go on and on stuffing the shotes, cramming the calves, housing the lambs, and taking care of the colts, which produce not a single cent for their board except their prospective worth when they are full grown, while chickens, if they have the same care and housing that the other stock gets, will pay for themselves many times over. There are many men living on farms who are not fitted to do general farming, who could make a success as poultry specialists.

Dark Brahma Fowls and Duck-wing Game Bantams.—The characteristics of the two breeds of fowls in our illustration are nearly identical, save in size. In courage and endurance the Bantams are not behind their larger relatives, and in constitution they are much hardier than any of the Bantam breeds. The plumage of the Duck-wing Bantams is precisely similar to that of the larger breed, from which they were

Dark Brahma Fowls and Duck-Wing Game Bantams.

undoubtedly obtained by long inter-breeding with the smallest specimens. The carriage and form are also similar; but the drooping wing of the Bantam breed is not to be observed in the game variety. In weight the cock does not exceed one and a half pounds, while that of the hen is about twenty ounces.

The Dark Brahma fowls are claimed by many breeders to be the best

of the Brahma variety. The head of the cock should be surmounted with what is termed a "pea-comb," which resembles three small combs running parallel the length of the head, the center one the highest; beak strong, well curved; wattles full; ear lobes red, well rounded, and falling below wattles; the breast should be full and broad; wings small, and well tucked up under the saddle-feathers and thigh fluff. The markings of the hen, except the neck and tail, are the same all over, each feather having a dingy white ground, closely penciled with dark steel gray.

A Cheap Poultry House.—Select an eastern or southern slope, if convenient. Dig a basement seven feet deep, sixteen feet long by twelve feet wide, on each side of which make lath pens, four feet one way by two feet the other way, which will give you sixteen pens in which to set your hens. In a basement like this you can set hens very early, and in the summer can hatch to better advantage, as the temperature is more even at times. One window will furnish all the light the hens will need. If you wish to set more than sixteen hens, you can make double tiers of nests, one above the other. By having the coops four feet on each side it leaves a four-foot walk between. The front of the coop should be made of laths, in the shape of sliding doors. Brick up the side walls, and put in two or three inches of tin chips, and cover over with dirt or sand for a floor, board over the top and cover over with tin chips and sand, thus making a rat-proof cellar and one not liable to freeze. On top of this, build a chicken house of boards with single roof for the roosting purposes. Attach a run fifty feet long, eight feet wide, and four feet high.

A Practical Roost.—A correspondent of *American Poultry Yard* says: "I have in use in my poultry houses, roosts differing from any I have ever seen or heard of, and thinking some of your readers might take advantage of it, I send you a description. I have found it the most practical of anything I have ever tried. It consists of two pieces of inch board, four to six inches wide according to the weight they have to sustain, and of the required length, suspended from the ceiling of the house, near the sides, by 3-8 inch iron rods at the ends of each piece. The rods have a square hook bent in the lower ends to fit the boards and a loop in the other to pass over hooks driven in the ceiling. Across these wooden pieces are laid the roosts proper of scantling or whatever the person may choose to use. The advantage consists in the roosts not being connected with the building in any way except by the rods, which I keep smeared with tar. This prevents the walls from harboring vermin, also the floor, which is the case when they stand upon the posts. Nothing is nailed fast, and the whole thing can be taken apart, carried out and saturated with coal oil all over and set fire to if you choose, which is unnecessary, as I think the oil does more good left on. To be sure, the frame work rocks some when the fowls get off in the morning, but I find this no disadvantage.

Derby Game Fowls.—The Derby Game is an old breed of fowls—one to which preference has been given for years by many breeders in this country. They were originally imported from Knowlsley, England, where they have been bred with great care for upwards of one hundred years, in all their purity. The perfect markings of the Derby Game hens are: Head fine and tapering; face, wattles, and comb bright red; breast shaded with roan and fawn color; belly and vent of an ash tint; primary wing, feathers and tail black, the latter carried vertically and widely expanded; legs, feet,

and nails perfectly white. The carriage of both cock and hen of this breed is upright and dignified. The pugnacious disposition of the cock equals that of any other game bird.

How to Cure Egg Eating.—Sometimes the habit is formed by the carelessness of the kitchen maid, or housekeeper, in throwing the egg shells into the pail and giving them with the other waste to the hens. This should never be done, if you want the hens to respect their own eggs. Understanding the cause of this unthrifty habit, it is not very difficult to provide a remedy. From a recent experience, we have found that the habit is very much broken by an abundant supply of crushed shells. It had grown so

Derby Game Fowls.

bad in a flock of twenty Light Brahmas, owing to neglect of this ration, that they devoured every egg without the closest watching, at the cackle of every laying hen. Giving the shells every morning, the craving ceased, and we found the eggs remaining in the nests undisturbed. As an assistant to this remedy, we manufactured an egg trap from a common nest box. This is so simple that any one accustomed to the use of tools can make it in an hour or two. A slight inclination of the board upon which the nest egg is fastened will cause the new laid egg to roll away from under the hen, beyond her reach, as soon as it is dropped. The rear board has the same inclination toward the center, and projects over the other board far enough

to protect the egg when it has rolled away. The space between the boards is just wide enough to give free passage to the eggs. The egg box may be lined with a handful of sawdust or chaff, to protect the shells from cracking. If the back board be furnished with hinges. it can be used as a lid, to allow of the removal of the eggs. It is a complete egg trap, and with the oyster shells, in our case, abated the nuisance of egg eating. Many think that when a hen has contracted the habit of egg eating, the shortest way is the best, and instead of eating, she is put into a condition to be eaten. But a good layer is too valuable to be given up without an effort to reform her bad habit, often acquired through the negligence of the owner. The egg trap works admirably, and secures the end desired by placing it out of the power of the hen to do mischief.—*American Agriculturist.*

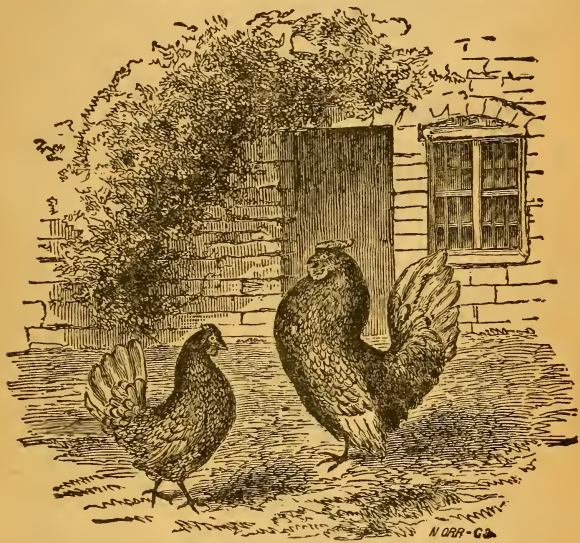
Tar in the Poultry House.—Poultry dealers seem to have failed to discover the value of tar. It is very useful and valuable in many ways. Some breeders tar their poultry yard fences in preference to whitewashing them, though we do not like to see it done, for it gives the surroundings such a gloomy, forbidding look. It undoubtedly contributes largely to the durability of the wood, protecting it from the ravages of storm and time. It is in the poultry house, however, that the value of tar is the greatest, for it conduces greatly towards healthfulness. When that scourge of the poultryman, cholera, makes its appearance, we would advise, first, a thorough cleaning of the house; next, a generous application of Carolina tar on all the joints, cracks and crevices of the inside of the building, and then plenty of fresh whitewash properly applied. The tar absorbs or drives away the taint of disease, and makes the premises wholesome. The smell is not offensive; in fact, many people like it, and it is directly opposite to unhealthy. To vermin, lice, etc., the smell of tar is very repulsive, and but few will remain after you have tarred the cracks, etc. A friend of ours in Maryland was once troubled with chicken cholera, and by adopting the above in connection with removing affected fowls, he soon put a stop to its ravages. A small lump of tar in the drinking water supplied to the fowl will be found beneficial, provided it is the Carolina tar, which is very different.—*Poultry World.*

Treatment of Setting Hens.—Every summer poultry raisers, if they have such fowls, are troubled more or less with setting hens. Some of these are very obstinate, and though many signify their intention to the hen of opposing her apparent desire to raise a family, by giving her a narrow darkened house, with a tub or such like as a principal figure head, she goes around for weeks clucking and hunting her nest. Now, I want to advise your readers, never to put a hen under a tub, or duck her head in water, or tie her legs to break her from sitting fever, but put her in an open space, enclosed with laths, poles, etc., where there is a roost, a rooster, and plenty of food. If you do not wish to take time or labor or space to make a place for night lodgings, why, it is an easy matter to transfer her to the hen house for the night, but I prefer leaving her in the stall till she proposes to begin doing what she was created for, that is, what you wish her to do, lay eggs. I find that malt is an excellent food for fowls. I speak from experience.—*Philip Raufee, in the American Rural Home.*

Silver Spangled Bantams.—These birds though small are most beautiful, and are kept more as pretty pets than for profit. They are full-

breasted, the flesh is delicate and rich, and they consume food only in proportion to their size. The eggs, too, are small. What the Bantam cock lacks in size he makes up in self-importance, being remarkable for his courageous and passionate temper, pompous manners and arrogance. His soul seems altogether too large for his body. The Silver Spangled Bantams have white feathers tipped with black, and they are, in the opinion of most poultry fanciers, the most beautiful of the whole family. For perfection of model and beauty of plumage, nothing can exceed them.

Ducks' Eggs Under Hens.—Frequent complaints are made that ducks' eggs, when placed under hens to hatch, fail to produce a fair proportion of



Silver Spangled Bantams.

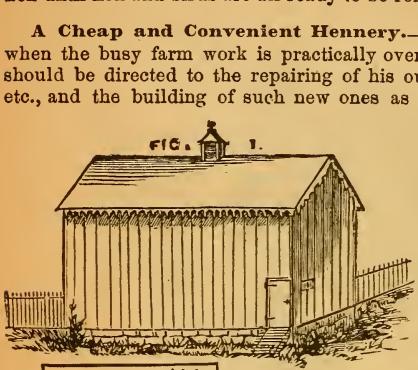
live birds. The failures are largely due to the fact that the eggs are kept too dry. It ought to be borne in mind that a duck in setting a nest will, on going off to feed, have a swim before she returns, and, as her feathers will be wet in consequence, the eggs get the benefit of it. Ducks' eggs, therefore, when placed under hens, must be kept moist or they will not hatch, for without the required moisture the inner skin becomes hard and tough, so that the bird cannot make its way out. It is a good plan to make the nest in a moist place; it is also well to sprinkle the eggs with a little warm water when the hen is off the nest.

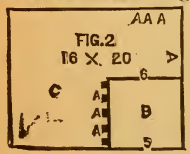
The large Cochin or Brahma hens are good breeds to use in hatching ducks' eggs, as these will cover a dozen eggs with ease. Ducks are prolific layers, and when the drake is not more than two years old the eggs are very fertile. The period of incubation for ducks is twenty-eight days, but when the eggs are fresh they will often hatch a day or two earlier. The eggs ought to be as nearly equal in age as possible, so that all will come out

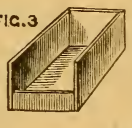
together. If the eggs are kept moist, as has been suggested, there will be little if any loss during the process of hatching.

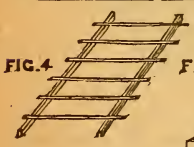
Should the hatching be very irregular the ducklings that are dry may be taken away and put in flannel in a basket near the fire. Remember that they require considerable covering; indeed, a light cushion placed over the flannel is a good arrangement, provided of course there be ample ventilation of the sides to prevent the young birds from smothering. Unless, however, there is considerable delay in hatching, it is better not to disturb the hen until hen and birds are all ready to be removed.

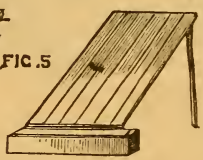
A Cheap and Convenient Hennery.—At this season of the year, when the busy farm work is practically over, the attention of the farmer should be directed to the repairing of his out-buildings for stock, fowls, etc., and the building of such new ones as have become necessary. In this connction, we present our readers a plan for a neat and convenient poultry house, which will be found both desirable and inexpensive. Our illustration of the building, Fig. 1, shows the north and west sides only. The building is 16x20 feet, 16 feet high to roof peak. Fig. 2 represents the inside of the building, which is described as follows: C, roosting and general room; B, egg-room, feed-room, etc.; A A A are nests. In the recess there are three rows of nests, one above the other; 5 is the door opening from the outside of the building; 6, the door opening from feed-room to recess, nest-boxes, and roosting-room. Fig. 3 represents the nest-boxes, which are 13x20 inches in size. These boxes are all movable, so that they can be arranged to suit circumstances. By raising a hinged board, arranged for the purpose, one can readily examine the nests from the feed or egg-room. Should a hen wish to set, take out one of the nest-boxes and turn it end for end, thereby placing the end that is closed up in the roosting-room. The egg or feed-room has shelves in it, and a loft where the feed is kept. Fig. 4 represents the roosts, two feet apart. Fig. 5 represents a flooring of boards with the same slant as the roosts, but which should be placed two feet away from the roost. The droppings falling on these boards, roll down into a trough at the lower end as shown. The loft above the feed-room is reached by means of a ladder which is made fast at the side of the room. The construction of this building is quite a simple matter, and any ingenious farmer can build it without the aid of a carpenter.











PLAN OF HENNERY.

Drinking Fountains for Fowl.—Convenient drinking fountains for the fowl are a necessity about the poultry yard. We have here illustrated two simple and practical little fountains, with descriptions, as follows: Fig. 1 shows a barrel fountain, having a small tube extending from the cask to a shallow dish or pan, which should be small, so that the fowls cannot get into it and soil the water. Fig. 2 shows a bottle fountain, which may be made by taking a two or three-inch plank and scooping it out one and a half inches, forming a shallow trough; then make a frame similar to the one shown in illustration, and insert the neck of the bottle, the nozzle reaching to within three-quarters of an inch of the bottom of the trough. Either of these designs will answer all purposes of a cheap and handy drinking fountain for the poultry yard.

FIG. 1.—BARREL FOUNTAIN.

A Poultry House Costing $3.85.—Experience has proved that twenty fowls, properly housed, provided with suitable food, pure water, clean nest boxes, plenty of dust, lime in some form, and gravel, will return more clear profit than fifty kept as they generally are upon farms. Suggest a good poultry house to the average farmer, and frequently there arises in his mind the image of an elaborate affair costing one hundred to one hundred and fifty dollars. Not being able to spare that amount for such a purpose, he goes without, and his poultry, exposed to the inclemencies of the weather, are a dead expense full two-thirds of the year, eating valuable food constantly and yielding nothing in return. A poultry house large enough to properly shelter twenty fowls can be erected at a very small cost. We give a list of all the materials of which, with the exception of the sash, cost three dollars and eighty-five cents. The sash was taken from a hot-bed that is used for sprouting sweet potatoes in the spring. When the sash is required for the hot-bed, the season is mild and the opening is covered with boards. This structure is nine feet wide, twelve feet long, and five feet high in the center. The short side of the roof is two feet long, and the long side, which fronts south and comes to within eighteen inches of the ground, is seven feet. At the farther end of the roof, boards extend over an opening

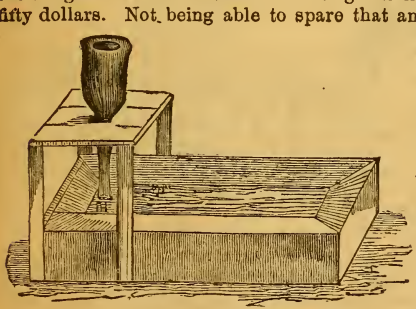


FIG. 2.—BOTTLE FOUNTAIN.

made for the fowls to pass in and out. The perches are one foot above the floor, and extend along the north side of the interior. The bottom board on that side is hung with hinges so it can be raised, and the droppings under the perches scraped out. The nest-boxes are arranged along the low side, the dust-box is placed in the sunniest spot, and the feed and water troughs near the door. One pane of glass in the sash is loose, so that it may be moved down for ventilation. The floor should be covered with sand when obtainable; if not, with straw, chaff, or other similar material that can be raked out when soiled. The whole interior should be given a coat of fresh lime whitewash at least four times a year, and the perches swabbed with kerosene. Hens kept in this house lay steadily all winter. The poultry house here described is easily cleaned, and answers the purpose nearly as well as one costing twenty times as much.

FERTILITY OF EGGS.

Fertility of Eggs.—The best way to tell unfertile eggs at as early a period as possible after being set under a hen is to remove her on the eighth day by candle-light, and hold each egg between the eye and the light in the manner represented in our illustration. If the eggs be fertile they will appear opaque or dark all over, except, perhaps, a small portion toward the top; and if they be unimpregnated they will be still translucent, the light passing through them almost as if new-laid. After some experience the eggs can be distinguished at an earlier period, and a practiced hand can tell the unfertile eggs even at the fourth day.

Eggs in the Household.—Eggs should always be kept in a cool place, but where there is no danger of freezing. In cold weather, they will beat quicker and nicer if laid in warmish water a little while before beating. Wipe dry before breaking. To separate the yelks from the whites, break gently in the middle, so as to form two cups of the shell. Carefully pour the yelk from one cup into the other, letting the white run away; but retaining the yelk as you pour back and forth, until the separation is complete. Beat the yelks first, as they can stand waiting better than the whites. Well beaten yelks grow several shades lighter-colored by the process. Beat the whites (with a strong flop) until the foam is so strong and dry that you may reverse the shallow bowl in which you beat them without spilling the foam. In boiling eggs, see that they are all perfectly clean, and be sure you do not crack them as you drop them into the water. A wire egg-basket, or a little wire dipper, is very useful.

Turkeys as Pest Destroyers.—An exchange, speaking of the value of turkeys in vineyards, says: "Our vine-growers are on the lookout for turkeys. A market for 2,000 or 3,000 young turkeys could be found at the leading vineyards. They want them to range in the vineyards and catch the slugs that are now attacking the vines. They found the turkey an excellent hand at the business. They would hire men and set them at work, but a sufficient force is not obtainable when needed. But the turkey does the work nearly as well as a man, and while catching the worms is earning his own food. Then, too, after the worm-catching season is over, he will sell for as much or more than he cost in the first place, and, therefore, he is a more valuable employee than a man would be. We think it would pay the large vine-growers to put up incubators, and every spring have a large brood of young turkeys ready to turn into the vineyards."

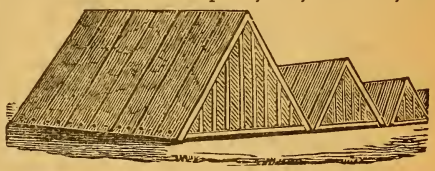


FIG. 1.—TENT COOP.

Chicken Coops.—Large fowls are not as mischievous in the garden as small ones, and they can be confined with less trouble, as they are not as expert with the wings. A little old hen is a perfect nuisance in a garden. Chickens, on the contrary, are a great assistance to the gardener, destroying a large number of insects. Place your chicken coops in the garden-walks, but be careful that the hen is well secured, or she will bury herself in your choicest beds. The form of these coops is not important, but it is important to have them so constructed as to protect the hen and her family from rain-storms, and it is especially necessary that the bottoms should be kept dry. They should therefore be placed on high and dry ground. Our engraving, Fig. 1, represents the old-fashioned tent coop, which, though quite common, is a very good style indeed. The front only of this coop should be left open, and, if so constructed, it affords pretty good protection from the weather.

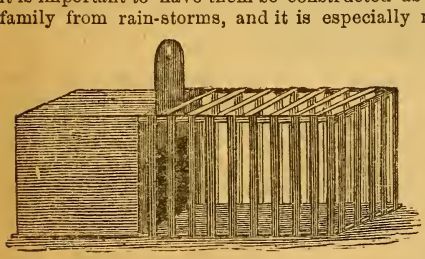


FIG. 2.—SAFETY COOP.

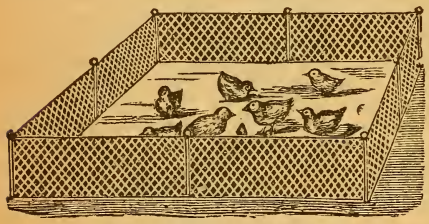
In order to protect the brood from all the poultry enemies, such as skunks, weasels, rats, etc., make a coop with two apartments, as shown in our engraving, Fig. 2. This is called the safety coop. One end of this coop is made box shape and tight, with the exception of a few auger holes for ventilation. Into this the hen will always take her brood for safety during the night. The side door is then let down, and all is safe until morning.

Feeding Cooked Material.—The feed for young chicks should always be cooked, for if this is done there will be less liability of bowel disease; but the adult stock should have whole grains a portion of the time. By cooking the food, one is better enabled to feed a variety, as potatoes, tur-

nips, beets, carrots, and such like, can be utilized with advantage. All such material as bran, corn meal, middlings, or ground oats should at least be scalded, if not cooked, which renders it more digestible and more quickly beneficial. Where shells or lime are not within reach, a substitute may be had by stirring a spoonful of ground chalk in the food of every six hens, but gravel must be provided where this method is adopted.

Egg Food.—The following foods contain all the elements that exist in eggs: Oats, wheat, barley, corn, bran, linseed, hemp seed, rape seed, crushed fresh bones, mustard seed, green cabbage and clover; and a reasonable mixture of all these, varied more or less with the aid of crushed limestone and gypsum, would afford every element called for to produce a constant yield of eggs. A large quantity of broken fresh bones is one of the most important aids, and with wheat, barley, broken linseed oil cake, and mustard seed and plenty of green vegetables and water, will provide everything that is required.

Poultry and Plums.—There is probably no kind of fruit better adapted to a hen yard than the plum. And the difficulty of growing this fruit, because of curculio attacks, is so far obviated by a flock of hens that combining the two is an advantage to both. A farmer who had a plum orchard from which the fruit regularly fell before ripe, never succeeded in getting a crop until he transferred his hens to this plot and kept them there until the plums were ripe. The fowls needed less food than when kept in close quarters and gave better returns.



CHICKEN PEN OR HURDLE.

Chicken Pen or Hurdle.—Those desiring to pen or fence in young fowls within a small compass on the lawn or in the garden, will find in our engraving upon this page a neat plan for hurdling in young chicks or ducks. It is made of one and a half inch wire mesh netting, in pieces one foot high by three feet long, and is secured to wire spikes (as shown), so that a fold of any required size can be fixed in two or three minutes. The mesh can be obtained of any dealer in wire-work.

Medicated Nest Eggs.—Cut a hole in one end of an egg as big as this capital O. In the other end put a pin hole. Now blow out the contents and you have the empty shell. Next mix plaster-of-Paris and water together to the consistency of cream, add a few drops of carbolic acid. Pour this into the shell until it is filled, and in twenty-four hours it will be dry and you will have a medicated nest-egg. Five cents worth of plaster-of-Paris will make a dozen, and that amount of carbolic acid is sufficient to scent a hundred.

Management of Chickens.—As a general rule, writes Mr. G. M. T. Johnson, of Binghamton, N. Y., do not disturb the chickens for the first twenty-four hours after their birth, if the hen will stay on the nest. The little things will not take any harm if they do not eat for the first forty-eight hours. The most they need is brooding. At this period they ge

more strength from it than from food. As a preventive of vermin rub a little fresh grease of any kind, say the size of a pea, on the top of the chickens' heads or backs. Do not put sulphur on the hen or chicks, as it will get in their eyes and poison them.

For the first week stale bread soaked in milk or water, or hard-boiled eggs chopped fine, is best. Feed onions chopped fine, and let there be handy some ground oyster shells or pieces of crockery pounded fine. Indian meal when uncooked is bad for young chickens. It swells and hardens in their crops. Indian pudding seasoned with black pepper is good for the first six weeks. As soon as they will eat it cracked corn or wheat is better for chickens than meal. They do not waste as much, it does not get sour, and one can have it near by them so that they are not obliged to feed so often. Do not rout the little chickens out in the morning before they wish to go. Do not let them out in the wet. Feed little and often, especially before they retire. Little chickens are frequently fed in the morning and not again till ten o'clock; then they eat too much. They are stuffed one hour and starved the next. By this means the chickens become stunted and otherwise diseased. Keep water near them in dishes so shallow that they will not be drowned. Do not set the coop on the cold, damp ground. If early in the season put the coop in a barn or shed with a floor to it. The little chickens need to be kept warm and dry. When they stand on the cold ground all night they are likely to be sick the next day, and soon the whole brood will be dragging their wings on the ground, peeping piteously for a few days, and then dying. Do not let them outdoors in the rain, but let them out of the coop or the uneasy mother will step on them. It is a mistake to put straw in the coop. The little chickens get their feet entangled and then the hen treads on them. Fine coal ashes are good in the coop. Later in the season, after the ground gets dry and warm, put the coop on soft ground if it is convenient, and sprinkle powdered sulphur over the ground. Change the position of the coop frequently.

It is not best to take the hen away from the chickens too early. As long as the chickens will brood, permit it. Warmth, good brooding and protection from the weather are better for chicks than good food, and the latter is very essential. Many a promising lot of chicks is ruined by getting chilled at night. As soon as the hen is taken away the chicks must be protected from the cold. It is a good plan to place the hen and chickens in the house where you wish them to stay after they are weaned. They will run out from there, and when the hen leaves them they will huddle together and so keep warm.

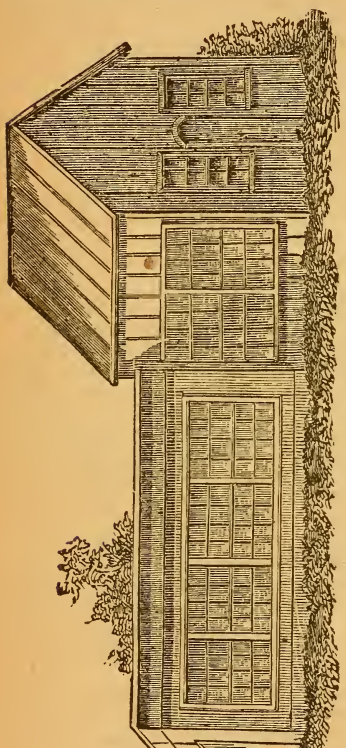
Do not furnish roosts for chickens. Oblige them to sit on the floor until nearly grown. Crooked breast bones are often caused by roosting too young. A great mistake, often made, is the trying to raise too many chickens on the same range of ground.

Many or few, they will wander about so far away from the coop and no farther. The ground over which they run will furnish naturally about so much in the form of bugs and worms, which are very conducive to the health of the chickens. If this is divided among a large flock each will get only a small portion. The larger ones will tread on the smaller and the chicks will grow slowly and be inferior.

It depends upon circumstances whether or not to allow the hen full range. She will pick up many luxuries for her chicks, but if she is a roamy, uneasy body she will worry the chicks to death by dragging them around. As soon as possible, cull out all inferior and defective specimens, thus giv-

ing their room to others. Select such fowls as you wish for keeping over. This requires experience and judgment, as many an awkward, inferior-looking chick develops into a fine bird.

As soon as the young cockerels begin to worry the hens and pullets, it is best to put them in a yard by themselves. For the larger varieties, Brahmas and Cochins, it is best to set very early in the season, as it takes so much longer for the chicks to mature. March and April chicks do better than later ones. They are large enough when the ground opens to make war on bugs and worms, which are then very plenty and so desirable for the growth of the chicks. They get well feathered out by the time nights are cold in the fall.



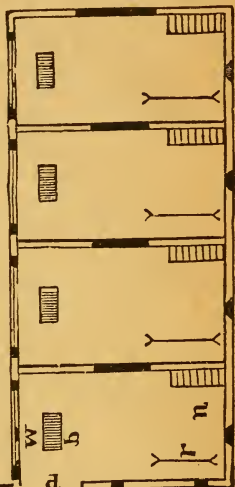
A MODEL POULTRY HOUSE.—ELEVATION.

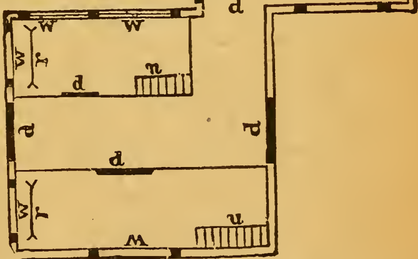
A Model Poultry House.—We present herewith an illustrated plan for a light, convenient and well ventilated poultry house, which we offer merely as a suggestion to work from, believing that any one who may be interested in poultry raising, may be able to derive some valuable hints therefrom. In our first illustration we show the elevation of the building, and it will be noticed that the house is quite attractive in appearance, and it would be an ornament to any poultry yard. Our second illustration shows the ground plan, which is briefly described as follows: The house is divided into six compartments, divided by thin wooden partitions, with doors opening from one to another, represented by the letter *d*. If at any time it is found desirable to separate the different breeds of fowl, it can be done by simply shutting them up in the different rooms, and keeping the doors closed. Each compartment is well lighted by a large window, and some are supplied by more than one. The windows are represented by the letter *w*. There are no letters shown in the three compartments at the left, as these rooms are an exact duplicate of the first ones shown at the right of the long section of the building. Each compartment is supplied with convenient roosts, *r*, nests or laying boxes, *n*, and a large box, *b*, which is useful for holding sand, gravel, etc. The size and height of the building may be regulated by the builder, who will of

course be governed by circumstances. A poultry house constructed after this plan, or one of similar character, we think will be found very convenient and in every way desirable. In making the illustration of the ground plan of this building, the artist has inverted the letters, therefore to properly read them you should turn the paper over.

Ducks in the Garden.—Of what are termed large water-fowls, including ducks, geese and swans, the former are well entitled to consideration for use and ornament about gardens and elsewhere, even if living water for them is lacking. Not but that it is far more desirable that ducks have access to a lake or stream than otherwise, but they will get along with a small supply of water in a pond or tank a few feet across, in a way that the others could not near so well do.

A MODEL POULTRY HOUSE.—GROUND PLAN.





Kept in such a manner, ducks will not only be found profitable and ornamental around a garden, but serviceable; they offer the advantages of being voracious insect consumers, and of neither scratching up seeds or roots nor flying about mischievously. It is a special recommend that they destroy those great plagues of the garden, namely, slugs, a thing that even hens will not do. One of our friends once had a garden on sandy soil, which as a result of heavy manuring, needed to fit the soil for vegetation, became terribly filled with slugs, cutworms and other insects; the young plants were destroyed and roses and other bushes greatly marred.

"Some ducks" were suggested. Eight or nine of these were bought, turned into the garden and given free range. The result was astonishing; in a few months the insects seemed used up, after which the flock of ducks was reduced to three, and these kept to guard against further trouble. To be sure, some things can be brought against the keeping of ducks in the garden, but these do not offset the benefits. They have a strong liking for strawberries, about the only fruit they will trouble. Keep them from the strawberry enclosures during fruiting time and trouble is averted. The Muscovies eat buds and young shoots—we can keep other kinds which do not. But ducks do trample down the plants and tilled earth, and eat young leaves. This is the most serious charge against them, but it may be reduced to a small thing, by not giving them free range at all times. Turn them into the garden only for an hour or two daily, and that in the morning, when the dew is on the plants. Then

they will seek mostly for slugs and similar pests. At other times they may be about the lawn. Where there is no natural bed of water for ducks, pains should be taken where they are kept to provide a change of water in a clean tank every day. This should be located near the water tank or other supply for convenience.—*Popular Gardening.*

Frame or Stone Houses.—There is considerable difference of opinion in regard to frame and stone poultry houses, some preferring one style and other breeders the other. In regard to mere comfort and utility, it does not make a shade of difference whether one or other is built, *provided* the best materials are used and the buildings are put up by those who understand their business and show it by their work. A frame structure, in the line of poultry houses especially, admits of more ornamentation than a stone one, and can generally be made more attractive and pleasing to the eye, though when we come to durability the stone ones are several degrees ahead, though not one-tenth of the poultry houses are of stone. Why this is is readily accounted for, for stone buildings on a farm are permanent structures, while frame ones can be moved whenever the first location becomes undesirable for reasons best known to the owner. A few men, with a number of good rollers to move the building on, can move quite a good-sized building in a few hours to some distance from its former place.

Frame houses for poultry are more generally desirable on account of being more quickly built; they can be put up at all seasons of the year, and are considerably cheaper than stone or brick ones, while the breeder can usually build a frame one himself, though but few would attempt a stone or brick one; and here permit us to remark that the cost of erection is materially lessened by the breeder doing most, if not all, the work himself, as many of them now do.

There are, however, advantages in a stone or brick poultry house which cannot be found in a frame one. The former are cooler in summer and warmer in winter, while they are not so apt to be infested with vermin—or, rather, it is easier to get rid of them when the lice, etc., are getting the upper hand. Stone houses should always be plastered, on the inside at least, and a coat of "white coating" adds much to the appearance and finish. When this is done there are no cracks and crevices for vermin to find safe lodgment in and breed in countless thousands, as they do in too many wooden structures. Where a breeder owns the place he resides on, and has carefully planned out his farm, then stone or brick buildings should be put up, for they have a substantial, "come-to-stay" look, while the danger from fire is reduced to the minimum.—*Farm and Fireside.*

Killing Poultry.—A correspondent of the *Poultry Yard* gives the following plan. It is so simple and excellent a one that we do not hesitate to advise its use: "I have been killing poultry with the knife, and in a different manner from that which I have usually practiced. I cut on the back side of the neck, just back of the ear or head, my object being to sever the jugular vein. There being two, one on each side of the neck, it would be best to cut the one near the carotid artery, when only one side is cut, thus severing both vein and artery, which I believe is on the right side. On hens I cut both sides of the neck, and, when the blood stopped running a stream, penetrated the brain by running the knife point through the groove in the top of the mouth. I saw no twitching or quivering of the muscles. Soon after I commenced to pluck the feathers with both hands; they came

off very easy; the birds were quickly stripped, and without any breaking and tearing of the skin. Spring chickens I cut only on one side, and do not tear them any to speak of. I must say that the method worked better than I expected. The objection to scalding in this section is that the fowls soon turn dark, and will not sell for as much as dry plucked." If the fowls are for immediate sale in a home market, and have been killed and dressed as above, their appearance will be improved by a quick immersion in hot water. An old poultry seller told us that he always treats dry picked turkeys and chickens to such a bath, and got two cents more on a pound for it.

Poultry Diseases.—Domestic fowls are not exempted from the laws of nature. Mortality and disease prey upon them at times, as well as upon other living things. Yet when we consider their countless numbers, their varied surroundings, and the various causes which predispose them to sickness—through neglect and want, and through the almost incessant drain on their sensitive and complicated ovaries to furnish us food—we are surprised at their general good health.

A German student of Konigsberg, who has made the osteology and organism of fowls a study, says that pullets properly cared for enjoy better health than other domestic animals, by reason of their active habits and varied food when allowed full range. The acids from buds, berries and vegetables help to assimilate the gluten of cereals, and if in excess, it too is neutralized by the carbonate of lime. The structure of the fowl is so beautifully arranged and harmonized that unless some unsuitable substance is eaten they are usually free from ailments.

Complaints reach us from correspondents about their fowls being diseased, while in other localities they enjoy an immunity from sickness. Now, philosophically speaking, every effect must have a cause. If fowls of the same breed or variety are exempt in one neighborhood, it is evident sanitary laws were observed by their keepers; if diseased in other places without malarial or atmospheric causes, it shows that the natural laws must have been violated, perhaps unknowingly and unsuspectingly. We cannot say that fowls won't die nor become diseased despite all the sanitary precautions possible, but what we want to convey is this: that a large percentage might be saved to poulterers, if they observed a few rules in the routine of their breeding, which are at all times and in all places in perfect harmony and keeping with nature, viz.: avoid in-and-in breeding; breed from none but exceptionally healthy and vigorous stock; take good care of the younglings, for much of their stamina, hardiness and usefulness depends upon their generous keeping while maturing; keep your stock free from vermin; feed regularly wholesome, varied food, but do not overfeed; give them pure water to drink; have their roosting-places clean at all times; keep them warm in winter and cool in summer and allow plenty of pure air, sunshine and exercise. Do all this, and our word for it, you will have fowls as nimble as crickets, as playful as kittens, and as musical as larks.

There are seasons and local surroundings trying at times to fowls, but a little attention in time may ward off disease. Evenings, when you enter the fowl-houses, if you hear hoarse sounds at each respiration, you have roup cases to attend to. Mornings, examine the droppings, and if you see a thin, creamy-looking discharge, you have symptoms of disease, and attend to it in time. To sum up: prevention is better than cure, and the best way is to avoid sickness by the observance of the laws of health.—*Poultry World.*

Why the Chicks Do Not Grow.—Several correspondents, writes Mr. P. H. Jacobs, have written asking for information regarding young chicks. One of them has been feeding largely of corn meal, and states that the chicks do well enough until they begin to feather, when they then droop and become sickly. This is due to the fact that corn meal contains but a small proportion of the elements that assist in producing feathers. In developing feathers, and just when passing from the "downy" condition, the chick must have suitable food, and often, or it will perish, even when surrounded by an abundance of food not required for feather growth. A feather contains nitrogen and the phosphates, the nitrogen (as ammonia) being made known to the organs of smell when the feather is burned. This nitrogen is that which is derived from meat, milk, the gluten of wheat and oats, blood, and sometimes from green food, but most abundantly from meat, milk, and wheat grains. The phosphates are derived principally from ground bone, wheat, oats, and milk. The feather also contains sulphur, soda, magnesia, lime, and other mineral elements. To properly feed the chicks, they should have such a variety of food as will contribute to all the wants of the body, and corn meal, though imparting fat or heat, will be found insufficient. While feeding these concentrated foods the chicks require, also, something of a bulky character, such as cooked potatoes, chopped grass, cabbage, lettuce, or onions, which serve to assist the digestion. A complete food may be made as follows: Cook ground oats until well done in enough water to serve the purpose until a gallon of the porridge has been prepared. Then add a quart of fresh blood or two pounds of finely chopped meat, half a pound of linseed meal, an ounce of salt, one-fourth of an ounce of sulphur, a pound of ground bone, and enough water to allow it to cook fifteen minutes more. While hot, add half a gallon of milk, and thicken the mass to a stiff dough with one part middlings and two of corn meal. Of course this will make a large quantity, but if it be baked as bread and crumbled for the chicks, it will be all they will require, while it will keep for quite a length of time. It should be fed four times a day, and in addition the chicks should have green food. If preferred, the mixture may be made in small quantities at a time by simply soaking the ingredients over night and allowing the mixture to boil in the morning, then thickening and cooking in the shape of bread.

Preparing Against Vermin.—Lice have been the bane of all who endeavor to keep fowls. Despite all the precautions lice will take possession, and, once established, work will be required for getting rid of the pests. It must be remembered that unless the *entire* premises are overhauled nothing can be done. Lice may be driven off the roosts and yet be very thick in the nests. Or they may store themselves in some overlooked crevice, to come forth and multiply as rapidly as before. No half-way measures will do for them. It must be a war of extermination, and not a single one must be left. Sometimes the yards must be cleaned up in order to escape them.

To keep the vermin away place tobacco refuse in the nests, which will not injure the hens in any manner, and anoint the roosts with coal oil once a week. Every three months the walls should be well whitewashed, with carbolic acid in the whitewash, and the droppings should be removed at least twice a week. Occasionally a good dusting of the whole interior with Persian insect powder will be an advantage. But getting *rid* of lice is the difficulty. To do so, the first thing is to clean out the hen-house and leave

to portion of the droppings. Lice often find lodgment in the droppings and hence a solution of carbolic acid should be sprinkled over those that are removed. Put whitewash into every crack and crevice *thickly*. Let it be hot, if possible, and do not be economical with it. Put plenty of carbolic acid in the whitewash—a teaspoonful of the acid to every bucket.

With an oil can or small bellows, blow the Persian insect-powder *everywhere*—in the nests, in the cracks, and all over the floor, first cleaning the nests for that purpose. Having used all these methods, now burn half a pound of sulphur on the floor, see that it burns well, and close the door, keeping it shut an hour. To make the sulphur burn, pour a little alcohol over it. If possible, before cleaning out the house, take the fowls off the roost, singly, and dust every part of the body with Persian insect-powder, rubbing a drop of coal oil on the top of the head and around the vent, but not on the body. Repeat this process once a week, if necessary. It is laborious, we admit, but heroic treatment is necessary if lice are to be driven out when once they become established.

To Secure Robust Chicks.—There must be more attention given to the feeding and care of the breeding fowls than we ordinarily find accorded to stock at the season when the hens are laying their spring litters of eggs.

It is not necessary that the green stuff—such as cabbage leaves, chopped turnips, onions, lettuce, etc., which is given in winter and spring time—should be wasted or lavished in the allowance. They should be fed a little at a time, but a little every day. Too much will tend to loosen their bowels and bring on scouring, which is to be avoided always. If green stuff is withheld for days or weeks, and then supplied profusely, they will "pitch in" and overeat. But if it is kept by them constantly, they will eat a very little at a time, and help themselves often, to their great advantage.

We know many fanciers who rarely think to attend to this important provision for their layers; and we have noticed their ill-success in hatching the eggs deposited in the nests by such hens, very often. If there be any one thing in the care of our breeding fowls which more than another needs to be remembered, we are sure this is it. And we cannot too frequently remind the reader to keep a supply on hand if his fowls have not sufficient range to procure it for themselves.—*Poultry Nation.*

Lime and Lime Water.—Without lime, poultry breeders would indeed be in a bad way, for there could be no whitewashing done, and that is so necessary to cleanliness and appearance as well as to the preservation of the wood; while the vermin would be only too thankful to have it done away with, for it is so distasteful to them. Then there is the bits which are scattered in the houses, on the floors and around in the yards; these, too, would be greatly missed, for they keep things pure, sweet, and clean, and free from foul odors which are so productive of disease. The hens, too, which lay such nice, fine eggs, would be at loss where to find material for their shells, and many a soft-shelled egg would be the result. While, in its fresh as well as slaked state, it is so useful and beneficial in economic and profitable poultry management, lime water is also of great use, though but few breeders seem to realize it. If it was more generally used, there would be very few cases of the throat diseases, unless the diseases were of long standing or hereditary. It is very easily prepared, and will keep for quite a while, if kept sheltered from the sun. Take a piece of fresh lime, about as large as a cocoanut. Slake it well in a little water. When it is slaked

thoroughly, fill up the small tub or large bucket with water and let it settle after which pour off the water for use.—*Am. Poultry Journal.*

Fencing.—In nearly all the matters pertaining to poultry management, there are many places in which much can be saved by those who are disposed to do so, and to accomplish that desirable end it is not necessary to sacrifice either comfort or appearance. Some of the most comfortable poultry houses are the cheapest, although but few who have the ready cash to build seem to realize that fact. In regard to the fencing problem, there is much that can be said. It used to be the plan, and is still so in some sections, to build fences some 16 to 20 feet high, using expensive (so as to secure durability) slats for the purpose, to restrain the flying propensities of the Leghorn and others of like strength and length of wing, but now the fence can be made with the ordinary four foot long ceiling lath, putting a couple of narrow boards at the bottom to raise it up a foot higher, and the top of the yard is covered with cheap tarred twine netting. This is much cheaper than a high fence, while its lowness makes it most durable, being out of the full force of the high winds. These twine nettings are also very useful to prevent the depredations of hawks and crows when the chicks are young, and when the yards are some distance from the house. For all ordinary purposes, lath makes a fence good enough, and with care it will last for three or four years, and often longer.

Pure Bred Fowls.—The question is often asked, are pure bred fowls any better than the common or mixed sorts, which we find on most farms? and if such is the case, why is it so? In every case where fowls receive proper care and attention, the results produced show a marked difference in favor of pure bred varieties. The reasons why this is so are easily explained. They are on the average much better layers; they lay larger eggs, and many more in the course of a year than the common barnyard fowl; they are also superior to common stock for raising chickens for market. Of course in mentioning a first-class fowl for market, we mean some of the most popular varieties, which are best adapted to that purpose, such as the Plymouth Rock or Wyandotte, as they produce chicks of uniform size, with yellow legs and bodies, which are preferable to the consumer to the common breeds, which produce chicks of all sizes, and legs and flesh of various shades of color. Again, pure bred fowls are certainly more pleasing to the eye than a flock of inbred mongrels, as each variety has a distinct color of plumage, which makes them very ornamental to any yard or lawn (if they are bred according to the requirements of the standard), and they will also sell for a better price to those who wish to procure a choice stock to breed from. In selecting a variety that will bring the best price in market, it is very essential that they should have clean yellow legs and bodies, and good size.—*American Rural Home.*

Importance of Gravel.—Sometimes many of the difficulties in the matter of keeping poultry may be traced to causes that are apparently very insignificant, yet they may for a long time cause much annoyance and trouble until the source of the evil is discovered. Failure to provide gravel is the cause of indigestion and bowel diseases in some yards. On close, compact clay soils, gravel is scarce, and the hens, if confined, can find no substitute for it. Coarsely-ground oyster shells may be of assistance, but they are too soft to fully answer the purpose; and, though gravel itself may be plentiful in the shape of small, *smooth* stones, yet to be serviceable, they

must be *sharp*, as their action is purely mechanical. So important is the matter of such material known to some poultrymen that they frequently pound broken glass or earthenware for the purpose, which has been swallowed by fowls with benefit, but whether a large quantity of such material is injurious or not is undetermined; some claiming that they give the broken glass liberally, while others maintain that something depends upon the size and shape of the pieces swallowed. If pounded bone be fed, the hens invariably select the sharpest and most irregular pieces, and it is their choicest delicacy. Sand is not a substitute for gravel, but imperfectly sifted coal ashes are of assistance. By keeping sharp gravel before the hens they will thrive better, and to be without it is equivalent to a deprivation of food, as the process of digestion will not be complete unless the food is fully masticated.

Table Qualities.—We all know how highly the breast of a turkey is prized, and it would be an excellent improvement on the hens if they could be bred with plenty of breast meat similar to that possessed by the turkey. But, unfortunately, we cannot secure all the desirable qualities in a single breed. Breast meat is the result of exercise to a certain extent. It is muscle, and the birds possessing it are naturally high fliers. The Brahma has the frame and build for laying on large quantities of meat, but it is deficient on the breast, due to having been bred to remain near the ground instead of flying. The Game, on the contrary, being an active, vigorous bird, is well developed on the breast, and with small bones and large muscles, which it possesses, it is an excellent table fowl. We do not allude to the standard exhibition Games, although they are not entirely deficient, but to those Games that are bred exclusively for the pit. Being trained and developed for strength, those characteristics are inherent in their progeny, and render them an excellent breed of fowls. When crossed on the Brahmas they combine quality and size, and though not such high fliers as the purer breeds, they possess the good qualities of the Games with the weight of the Brahmas. In breeding for home use these points should not be overlooked. Quality should never be sacrificed under any circumstances.

One Dollar Per Hen.—Somebody, writes a breeder, wants to know if $1 per year profit from each hen is a good average. Where hens are kept as the majority of farmers keep them $1 per head is quite as much as the owner ought to expect, and I don't believe the average farmer can make $100 easier than by keeping and caring for a flock of 100 hens. If he will do a little something extra in the way of housing, care and feed, the hens will add at least 50 cents to the average dollar; why, we have pullets that at present writing have laid a dozen eggs apiece since they first commenced laying, the first week in October, but they didn't roost in the trees and live on sawdust and gravel; they had a good, warm house and plenty of food and care. If those pullets don't earn considerably more than their "average dollar" per head before next spring I'll cut their heads off, every last one of them. And I may as well tell you that when I fail to make at least $3 profit for each hen, duck and turkey kept for breeding stock, I don't brag much about my success in poultry raising.

Spring Fumigation.—Turn out the fowls some cool or damp day, and then close all the cracks in the house except the door. Then take a kettle of live coals and place on the ground in the center, but if there is a wood floor, lay a flat stone in, on which set the kettle. Throw a half pound or a

pound of sulphur upon the coals, and shut the door and leave the house closed for a few hours, and we will venture to say no more lice or mites will be found in it for a few weeks thereafter. If the house is not tight enough to admit of thorough fumigation in the manner described, then clean as well as you can, and whitewash with fresh lime, slapping the brush vigorously at all the cracks and sealing them hermetically; after which apply kerosene oil to the roosts. The house should be well aired after fumigation before the fowls are admitted, and well ventilated at night. We have never known the "whitewash cure" to fail if properly applied, but fumigation is a quicker process.—*Poultry World.*

Damp Hen Houses.—Damp quarters for hens mean few eggs and an increased death rate in the flock. In the breaking up of winter, if water stands in the hen house, thus wetting and liberating the ammonia from the droppings, the results are bad in a two-fold ratio: the loss of the manure, and sickness and death in the flock. Those who have such quarters for fowls will best secure their own interest if they at once clean the floors, lay a board floor above the water line, and strew it with carbolated lime and old hay and leaves, thus keeping the fowls comfortable and secure from disease, and ensuring a larger supply of eggs.—*Our Country Home.*

Imperial Egg Food.—Prof. Jordan has analyzed what is known as the Imperial Egg Food, and gives the proportions as follows: Moisture and organic matter 16.05 per cent., mineral matter 83 95 per cent., nitrogen 1.00 per cent., carbonate of lime 55.6 per cent., bone 14 to 17 per cent. The 83.95 per cent. of mineral matter includes the carbonate of lime and bone, probably, while the nitrogen is included in the organic matter. To make the above intelligible, the mineral matter consists of oyster-shells and bone, while the organic matter may consist of pepper, fenugreek, blood, dried meat, or ground linseed meal. Hence, 10 pounds of the egg food would consist of about the following: Ground shells 6 pounds, ground bone 2 pounds, ground meat 1½ pounds, fenugreek one-half pound.

Fertile Eggs.—Geese usually pair, though an extra goose will be accepted by the gander if she has no mate. Guineas also pair and mate. The drake will take four or five ducks to his care, but in confinement the number may be increased. A single union of a gobbler and hen turkey fertilizes all the eggs for that season, or rather for that clutch. If the turkey hen sits, and after hatching begins to lay, she should again be placed with the gobbler. It is conceded that eggs from the barn-yard hen become fertile on the fifth day after she has been mated with the cock, and the eggs will sometimes hatch after the cock has been removed for eight or ten days. This depends, however, upon the position of the eggs in the ovary, and the duration of the time the hen has been laying.

Animal Food for Chickens.—Economy in the distribution of the grains and other food furnished our poultry is a matter that deserves the closest attention in our daily work and our earnest consideration when we are making up the bill of fare for the season. We may build costly and elegant houses, and spend time and money on the runs and all the accessories of a first-class establishment, but the cumulative cost of food will, in a few years, aggregate a sum as large or even larger.

A poultry house may be expensive, but as long as it is well planned and built it is a profitable investment; and once finished, the chances for waste

and loss are gone. But with provisions this is not the case; it is not sufficient to give enough every day. We must see that there is neither loss to the fowls nor their owner through over-feeding or scant supply, and that a judicious variety of feed is used.

Though the losses through lack of economy are not so large when but a dozen or twenty fowls are kept as when the breeder has a hundred or more to look after, they are by no means to be despised, no matter how small; for if the loss is small, the profits from a few fowls are small also, and the percentage of loss is the same in each case. When we come to poultry keeping on a larger scale, however, the strict economy necessary is very apparent. While the number of fowls kept was small, their sustenance could, for the most part, be drawn from the refuse of the table, and cost nothing; but when a large number must be maintained—in health—it is evident that this source of supply will be entirely inadequate. To obviate this difficulty it is necessary to make special "messes," suited to the almost omniverous appetites of domesticated poultry. Fish and flesh are all one to any flock; and when Nature does not furnish enough in the way of worms, grasshoppers, and other forms of "meat on the hoof," we must supply the deficiency by preparations of chandlers' scraps and refuse butchers' meat—as a rule, made into a sort of hash, with meal—and green food of any available description. When meal dough is used, however, pains should be taken to see that only as much is made as can be eaten up clean at once, or else that which is left over should be kept in a cool place, as otherwise it will sour rapidly, and when sour is very inimical to health.

Young chickens need animal food particularly. When it fails to do them good it is in consequence of the common fault of over-feeding. They cannot bear big rations of rich food. Watch the mother hen at liberty scratching for her young brood, and see how infrequent and how small the morsels, and how many the competitive mouths. Now the practical question arises, how shall we best supply animal food artificially? A method has been recommended for producing maggots as food, not only for chicks, but old fowls, and in sufficient quantity to give a large flock a meal every day.

The first step is to dig a trench, a foot deep and six feet square, and brick up, or cement the sides so that none of the maggots can escape. Then throw in enough straw, that has been used as bedding for horses, to make a layer three inches thick. On this place a layer of horse manure a couple of inches thick, spread evenly. Next make a layer of scraps from the table, Indian meal, yeast, and almost anything which will cause fermentation rapidly. This layer should be about one inch thick. Lastly, sprinkle about an inch of loose dirt, and over all place a roof tight enough to keep out rain and sun, but open under the eaves.

These preparations completed, bide your time and the coming of the muck flies which will take possession and lay their eggs. In a few days the pit will be swarming with maggots, and a feast for your fowls be of easy access. By making two or three pits, a constant supply will be furnished, which will stand in the stead of much other animal food and effect quite a saving.

So far so good—or perhaps so *bad*. There is something mean and disgusting about this process, and meal worms are neater, though perhaps not one whit more healthful for the chicks. First, what is a meal worm? many will ask. A meal worm is the article so often found in ship's biscuit and the "hard tack" used in war. It frequents granaries and bakeries, and does much damage by boring through sacks of meal and flour.

Although a pest, its pure food makes it very cleanly and a delicate tid-bit for young chicks.

To produce these worms in quantities it is only needful to get a small stock, say three hundred, and place them in an earthen jar with scraps of old leather and other refuse animal matter mixed with bran and refuse meal. Place some cotton waste on the mass and keep it moist with water, and in a short time the worms will increase at an almost incredible rate. In sixty days there will be enough to give the chicks a meal daily.

Fresh fish make a mild, nourishing animal food for young chicks. There is quite a host of our readers who live near large bodies of water or rivers where fishing is carried on during almost all months of the year when the water is open and free from ice. Many of the small fish are either left to decay on the shores, or to be devoured by gulls and other birds. Many cart-loads of them are annually used as manure. There is a far better use for a part of these offal fish, and that is, as poultry food, for which they are valuable, especially to fowls in confinement.

There are several ways of preparing the fish, but the best and simplest is to take a portable boiler about half full of fish, fill up with cold water and start your fire. As soon as the water comes to a good boil, the fish will be sufficiently cooked and ready to be removed. When the fish are cooked they fall to pieces. Now take some of the fish, bones and all, and mix corn-meal with this and the liquid the fish were boiled in, and you have a mess which the young birds will greedily devour and will thrive upon. Do not feed too much at a time nor oftener than every other day on this food, for too much of a good thing is as bad as not any. Some persons on the shore or near the fisheries cook a small mess fresh for their fowls every other day, while others with large flocks of fowls and ducks cook a barrel at a time and make a slop with them, the juice they are cooked in and bran, corn-meal or corn and oats ground, mixed with it, feeding the mess with evident good results.

But in the absence of fish, potatoes boiled in milk, where there is plenty of the latter upon the place, is an admirable preparation to feed to young growing chicks. A mixture of one-third corn-meal and wheat bran, with the above, if given to them *fresh* every day, will make the young chicks grow wonderfully, more especially if they have a run at large in the fields, where they can exercise themselves properly by hunting and chasing insects, grasshoppers, etc.

It will not pay to purchase milk for this purpose, probably, although this depends upon circumstances. But upon the country estate there is always surplus milk (sweet or sour) that is thrown to the pigs. Give this to the young poultry, and it may thus be turned to better account. And although sweet milk is better than stale for this purpose, yet any kind of skimmed milk, sour milk, whey, buttermilk, or bonnaclabber, is excellent to mix the dough with, which is fed to chickens. Try this, you in the country who have been in the habit of throwing your waste milk into the hog-pen; and as for the poultry raiser in village or suburbs of the city, latterly the advent of creameries has in some cases placed within his reach skim-milk peddled from these establishments at low prices.—*Poultry World.*

Poultry Jottings.—I am satisfied that Dark Brahmas can be kept on less food, considering their weight, than the smaller varieties. The heavy Brahmas keep in a better condition than the small, active breeds. The Brahmas eat what they want and are satisfied, but the Leghorns, the Games

or the Hamburgs, will fly all over you for more if you go into the yard. I have kept both, and the Games, the Hamburghs and the Leghorns would always appear to be hungry, while the Brahmas would be satisfied with what they had eaten—as it is not half so difficult to fatten a Shorthorn as it is a Jersey.

The Cross for Eggs.—If I cared only for eggs I would cross a Wyandotte cock on Plymouth Rock hens. I have a friend who has kept that cross for several years with the most remarkable results. Most of the pullets from this cross are a lustrous black, about the size of Plymouth Rocks, and the best layers I know of. She says they lay all the time, but that being not explicit enough, I induced her to keep a record. Last September she reported 105 eggs from five hens 17 months old. Her young pullets had not commenced to lay then; pullets commence to lay at seven months old. As a rule hens do not lay as well in September as in the spring, but that record is good enough for any month. They have clean, dark legs, yellow skin, plump bodies, and when dressed are as handsome poultry as one could wish; cockerels dressing about 12 pounds per pair at six months old. The cockerels are usually the color of Plymouth Rocks and have yellow legs.

Yellow Skin an American Taste.—The fancy for yellow skin and yellow shanks is purely American and without any good reason. An Englishman once said of our Plymouth Rocks and Wyandottes, "They would be a fine fowl if they hadn't those blasted low shanks and yellow skin"—the white-legged and white-skinned Dorking being the English ideal for a table fowl. The Dorking, Houdan and Game are admitted the world over, *when cooked*, to have no superiors, yet neither has yellow skin nor yellow legs. The partridge, quail, woodcock and snipe are all dark-legged, white-skinned birds, and none will call them inferior to our yellow-legged chickens; nobody eats the shanks, and many do not eat the skin. No yellow-legged fowl I have ever seen compares favorably in smallness of bone or plumpness of body with any of the fowls or birds just named; yet it will pay the farmer best to raise what there is the greatest demand for, therefore in Massachusetts we must raise fowls with yellow legs and skin.

Eggs Affected by the Feed.—Eggs are as sensitive as butter or milk, and as easily affected by the food or water. Feed your hens onions to-day, and to-morrow's eggs will have a flavor and odor that no one can mistake. The same occurs where hens feed on the manure pile and drink barnyard water; the eggs will remind one of badly prepared tripe. Mr. Felch says celery fed to ducks a few days before they are killed imparts its flavor to the meat; it is true, the same occurs when hens eat filth. Much is said about the color: Dark shell eggs bring several cents more than white ones in this market; and I think they are certainly as good if not better. The best way to preserve eggs is to use them while they are fresh.

Good Land for Poultry.—It is a mistake to suppose that land good for nothing else is good enough for a poultry farm. The best land for other crops will produce the best crop of chickens; on rich land they find the most insects and young, tender vegetable growth, that goes so far to make them profitable. I am surprised that young men do not secure small farms that can be purchased at moderate cost, a short distance from market, and engage in poultry culture, instead of crowding into stores and factories. In the poultry business there is no danger of strikes just when you have the most orders; no committee can induce your hens to quit work if you take good care of them. Keep a good dog or two and a shot-gun, and if any "committees" come along, day or night, to do "business" with

your hens, you will be all right.—*From H. A. Mansfield's Address before the New England Farmers' Meeting.*

Poultry Notes.—At the seasons when hens are laying abundantly, lime should be kept before them at all times, or there is liability of soft-shelled eggs. The best way of feeding lime is in the form of raw, crushed bones or oyster shells.

Young chickens need animal food. When it fails to do them good it is in consequence of the common fault of over-feeding. They cannot bear large rations of rich food. Watch the mother hen at liberty scratching for her young brood, and see how infrequent and how small the morsels and how many the competitive mouths. A method has been recommended for producing maggots as food not only for chickens but old fowls.

The first step is to dig a trench a foot deep and six feet square, and brick it up or cement the sides, so that none of the maggots can escape. Then throw in enough straw that has been used as bedding for horses to make a layer three inches thick. On this place a layer of horse manure a couple of inches thick. Next make a layer of scraps from the table, Indian meal, yeast and almost anything which will cause fermentation rapidly. Lastly sprinkle about an inch of loose dirt, and over all place a roof tight enough to keep out rain and sun, but open under the eaves. Soon the muck flies will come and take possession and lay their eggs. In a few days the pit will be swarmed with maggots, supplying a feast for young fowls.

Fresh fish make a mild nourishing animal food for young chicks. The best and simplest way of preparing fish is to take a portable boiler about half full of fish, fill up with cold water, and start a fire. As soon as the water comes to a good boil, the fish will be sufficiently cooked. When the fish are cooked they fall to pieces. Take some of the fish, bones and all, and mix corn meal with this and the liquid the fish were boiled in, and a mess is furnished which the young birds will greedily devour.

In the absence of fish, potatoes boiled in milk, where there is plenty of the latter, is an admirable preparation for feeding to young, growing chicks. A mixture of one-third corn meal and wheat bran with the above will make the young chicks grow wonderfully if given fresh every day. The best feed for sitting hens is plenty of good, sound, whole corn. They should have plenty of fresh water to drink.

Tarred paper applied to the outside of the building and exposed to all kinds of weather, if put on with care, will last two seasons. Tarred paper applied to the inside of buildings will be of some service in protecting fowls against vermin.

Mark the date of collection on all eggs gathered and you will know just which ones to set. If possible, make the nests upon the ground. If not, place a fresh-cut grass sod at the bottom of the box, and sprinkle sulphur or coarse snuff upon the nest to keep off vermin.

While fine hay or fine, well-broken straw makes good nests, a very good nest can be made with wood shavings, selecting only the thinnest and softest. They can be lightly sprinkled with diluted carbolic acid to keep away lice. Being very porous, they will retain the smell and affect of the acid much longer than any other material.

In preparing the nests of your sitting hens, make the nests to fit as nearly as possible the shape of the hen's body. Use damp earth, as it is easily shaped, and serves the purpose of furnishing the eggs with needed moisture. In case trouble may be expected from rats, cover the nest, hen

and all, every night with a box having wire cloth at the ends or sides, to let in air.

Hay is somewhat objectionable for nests, as the seeds sometimes bait the mice, and again, the hens are likely to scratch for hayseed, and thus break the eggs. Straw, well-broken and made soft, is a much better material. Do not cut the straw in a machine, as that fills the nests with sharp points which prick the hen and annoy the young chicks. Shavings, as mentioned above, are very desirable for nests.

Keep the nest of your sitters free from lice during the whole term of incubation. There are many methods adapted to assist the fowl keeper in this matter. Tobacco, snuff, whale oil, sulphur, kerosene oil, carbolic powder and acid, coarse pepper-sittings, are applied upon the fowl under the feathers, upon the roosts and in the nests, with various results more or less successful. Nothing is so good for general use in our opinion as the Persian or Dalmation insect powder for the absolute annihilation of lice. Common, cheap sulphur may be obtained at any druggist's. Scatter it in the nests and under the feathers of the sitting hens. To rid the hens of lice, dust them with flour of sulphur by night. The heat of the hen's body in the nest causes the sulphur continually to give off a smell which keeps lice and other vermin at a reasonable distance.

For a regular spring fumigation, turn out the fowls some cool or damp day and then close all crack in the house except the door. Take a kettle of live coals and place on the ground, or, if there is a wood floor, upon a flat stone which may be provided. Throw a half-pound or pound of sulphur upon the coals and shut the door, leaving the house closed for a few hours. Others clean the house as well as possible and whitewash with fresh lime, slapping the brush vigorously at all the cracks, and sealing them hermetically, after which applying kerosene to the roosts.

Let your sitting hen come off the nest daily. Allow her to roll in a dust box near by. Give her food and drink regularly. In cold weather see that she goes back before the eggs chill. Cover her sitting box with course bagging if she seems inclined to give up her work. Mix a little powdered charcoal with the soft feed and it will assist digestion and prevent disease.

This is a good time to sow grain in the freshly spaded runs. In a short time it will sprout up and be a very attractive food. Plant Russian sunflower seeds, in rows three feet apart and hills two-and-a-half feet in the row. Plant two seeds in a hill and thin out to one stalk when the plants are a couple of inches high.

Some chickens die because of the toughness of the skin which lines the shell, the young things not being able to break through it. Help may be rendered, if you are very skillful, by carefully removing the shell and skin at the large end of the egg, about one-third of the length. This may be done when the time is up. If it is done prematurely or before the yolk is entirely taken up, bleeding will ensue and death will be the result.

The compound of two-thirds wheat bran to one-third meal, wet with skim milk and fed in the morning warm, has a good egg-producing effect. This is far better than clear meal. The bran does not tend to fat, and the milk is even better than meat in the production of eggs. Fowls may eat too much meat for health, but of milk they may drink all they wish.

Always set your hens in the evening rather than by daylight. They will be more sure to stick in the nests afterwards. For two or three days at first be careful that the hens are kept undisturbed. Clean out thoroughly

the nests which have been used by sitters. Ventilate and whitewash them and sprinkle them with carbolic acid diluted or with insect powder before using them a second time. A force pump throwing a spray is used sometimes in throwing whitewash and other lice-killing liquid into the cracks and crevices of the poultry quarters.

Make coverings of leather or strong cloth, and fasten them on the spurs of your gobblers. Round off the points of his claws at this time of the year. If he is very large this is important. Ducklings are very delicate birds, and if hatched early should be kept away from the water. At this season it is better to allow them to get four weeks old before allowing them to swim, otherwise they chill, as their down is no protection against cold and wet, not being oily as is the case with the down of wild ducklings.

The situation for the fowl house should always be chosen in a dry place; better still if placed upon elevated ground. It should face east and south if possible, in order to catch the rays of the morning sun, and that the flock may enjoy the sun warmth in the afternoon in winter.

Stagnant or damp soil beneath the hen house is bad for poultry. They cannot be kept healthy in such a situation. The best soil for the hennery to occupy is a dry, sandy or gravelly one. A wet, soggy foundation to the hennery is fatal to the well-being of the stock confined in it.

Light, warmth from the sun's rays, thorough ventilation, and an interior that can always be kept dry, are the prime needs for a good healthy fowl house.

Variety in food is an indispensable requisite of success. Fowls may be made to live when fed upon any single article of diet, but profits under such circumstances are not to be expected. Variety in diet promotes health, and health secures the activity of the reproductive organs. Fresh water is indispensable. Foul water leads to disease.

Fowls should never be allowed to enter barns or stables, as they will foul more hay and feed than their eggs are worth. Their domains should be entirely separated from those of horses and cattle. Not only are vermin from poultry sometimes communicated to horses stabled in their neighborhood, but the specially filthy and offensive excrements of the fowls defiles the hay and grains.

A young and nervous horse, unused to fowls, is often frightened if, by accident or otherwise, a cackling, scratching troop of hens finds entrance to his stable, and he will resign his oats to the petty thieves and stand trembling while they devour his well-earned dinner. Be sure that stable doors and windows are so arranged that neither domestic fowls nor pigeons can enter and annoy the rightful occupants.

No doubt the hens like the range of a barn in winter. They can pick hay seed and clover leaves much to their advantage. The best method, however, is to gather up the dried blossoms, leaves and seeds, with other chaff, and deposit the same in the poultry house, where the fowls can scratch it over at their leisure.

It is well to season lightly the food of all fowls both young and old. The digestive organs of all animals abhor a flavorless article of food. Some sort of stimulant is necessary to gently urge the digestive organs while at their work. A very little salt, pepper, mustard or ginger, and other things of a like nature, is sufficient to give a flavor to the poultry mush or to the cooked vegetables.

For feeding young chicks a few bread crumbs soaked in milk are the best things for the first two or three days. Feed only a very small quantity.

When they get older they may have a variety of grains and vegetables. They cannot swallow large kernels of corn, but they can have cracked corn or small pop-corn. Millet seed is well adapted to young chickens.

One of the best things for chickens from a week to six weeks old is bread, not the ordinary household bread, but an article made on purpose for chickens. Mix corn meal and wheat bran, neither the fine nor the coarse bran entirely, but a little of both, with some fine rye or wheat flour to give it consistency. Put in water enough to make a dough, add a little salt and bake it in an oven as if for the family. This cheap bread can be used to great advantage for young chickens by breaking or rubbing it into crumbs or by soaking it in milk until it becomes soft and can be eaten readily. Never give too much food. Allow your chickens to leave off hungry. Thousands of young chickens are killed every year by gorging with rich food.

For well-grown fowls a feed of whole corn at the evening meal is excellent, because it digests so slowly that the fowls will have something in their crops all night. The digestive organs do not slumber, but keep at their work the whole night long. In cold weather, especially, the food in the crop gives strength and support and power to resist the cold of the small hours, when, if the crop was empty, the birds would not be so well nourished.

It is a good plan to boil fish before feeding to poultry, although raw fish, chopped fine, is not to be despised. Meat and fish, when boiled, form a diet more nearly resembling the soft insects which are procured in a state of nature by the fowls. If you boil the fish no other preparation is needed if they are placed in a clean spot. The fowls will pick off every morsel of flesh from the bones.

If a flooring of boards is used when the poultry house is built, it will be advisable to cover the same with dry earth. If in a dry spot, the floor may be dispensed with and the earth may be used for the floor. The tainted earth can occasionally be removed to the depth of six or eight inches and its place supplied with fresh earth. If dependence is placed upon an earth floor, it must of course be a little above the surrounding ground, to provide good drainage. It is cheaper to build the house upon a little knoll or rise of ground, or to raise a little mound of earth before the house is built, than to carry the earth into the structure afterwards.—*The Poultry World.*

Polish Fowls.—The principal varieties of Polish fowl are the white-crested black, golden, silver and buff. The black with white crest seems to be distinct from the other sub-varieties. It is beardless, while the others are generally bearded. In the Golden Poland, the cock is of a bay color throughout intermixed with black lacings. The wing-coverts and secondaries should be of this bay laced with black, as also the breast and the tail, and if the beard be brown laced with black, it is preferable to a beard entirely black. The crest should be large and well formed. In birds above a year old there is often a tendency to a little of grayness in the cock's tail, but the presence of any white or gray feathers in any part of the cock's plumage is objectionable. The Golden Polish hen is quite as beautiful a bird as her mate. She should be of a very rich bay color throughout, each feather being accurately and evenly laced with black from the crest to the tail. The crest in young birds is often much darker than the rest of the plumage. It gets lighter and generally white at the first moult. The beard is often black or very dark, but it is better laced.

Size is not considered a point of vital importance in the Polish fowl, but the larger they are the better they are appreciated. All the bearded Polish fowls are adorned by very voluminous neck-hackles, and the thicker and bushier their necks, the handsomer is the bird's appearance.

In the sub-varieties, the crest is the main or characteristic feature, and a large and well-shaped top-knot is greatly to be desired.

Polish fowls, although so exceedingly beautiful, are very hardy. They require little care to keep them in health. The white-crested blacks are the least hardy and the most liable to catch cold in bad weather, still, even they are much hardier than many of our breeds of fancy poultry.

Polish chickens are easy to rear, and require little extra care beyond that of any chickens of hardy breeds. The chief difficulty with them is that the larger the crest of the young ones the greater the liability to loss, because Polish chickens are of very roving habits, and they will often roam to a considerable distance from home if they have the chance, and if very large in crest, may experience some difficulty in finding their way back again. Some clip the sides of the crest of young birds. It is considered a good practice, if a good supply of eggs during the breeding season is wanted, to clip the crest of the breeding stock. Many more eggs are secured from the same birds than if left unclipped. It no doubt spoils their appearance for the time being, but they come out all right again at the moulting season.

In mating Golden Polish fowls for breeding purposes, it is better to put lightly marked birds with heavily marked ones of the opposite sex, rather than all heavy or all light in marking. Experts prefer to put a light cock to dark hens, rather than a dark cock to light hens. The produce is of better quality from birds mated thus than from dark cocks and light hens. No breed looks better in the exhibition pen than these ornamental Polish fowls.

Using Old Hens.—The oft-repeated advice to sell off the old hens should not always be followed. Something depends, however, upon whether the hens are kept simply to supply eggs for culinary purposes or for hatching. The pullet hatched in spring, say April or May, will often begin to lay when she is six months old (or sooner if of a small breed), but she will not be fully matured until she arrives at the age of one year. The consequence is that while she will lay she will be growing at the same time, and is therefore not competent to produce eggs that will give satisfactory results when used for incubation. Her powers are doubly taxed, and her offspring will be weak unless she is mated with a vigorous, strong, and active cock. Those who have taken pains to secure fine, healthy pullets have been disappointed in raising them on farms where incubators are operated, as they lay small eggs, and often begin to lay so early as to produce eggs no larger than those from a pigeon.

If eggs are desired for hatching purposes, use hens that are in their second year (over one year old), and mate them with a cockerel that is at least one year old, and the result will be that a greater proportion of eggs will hatch, while the chicks therefrom will be strong and easy to raise. It has been said that a hen becomes less valuable after she is two years old, but it is safe to assert that she will lay well until she is four years old, and although she may not lay quite as many as a pullet nearly grown, yet her eggs will hatch better, and a larger number of chicks secured from her. But, it may be added, do not forget the fact that pure-bred, strong, vigorous cocks must be used in the flock.

Rapid Growth of Ducks.—We have experimented with a brood of young ducks, of all kinds—common, Rouen, Pekin and crossed—in order to observe their growth. When very young they were attacked by cramps, but it was discovered that by giving them tepid water to drink, instead of that very cold, they were no longer afflicted in that manner. Hence, never give cold water to very young ducks. At birth, ten ducks, together, weighed one pound; a week later the same number weighed two-and-a-half pounds; the second week the ten had reached four pounds, or nearly half a pound each when two weeks old.

Mixed Breeds.—We do not mean crossed fowls, but those of all colors, shapes, and sizes. What is the use of keeping hens that vary in every particular when a uniform flock is so much more attractive? It is very easy to change a flock. By using a pure-bred rooster the chicks will be very nearly alike, and, if the best of them are kept as layers, the result will be that the poultryman can breed with greater certainty and also avoid having dissimilarity. By then using a pure-bred male every season thereafter, the flock will soon consist of hens so uniformly alike as to render it difficult to distinguish one from the other.

Buying Pure-Bred Males.—In summer the breeders thin out their flocks and dispose of the surplus. These are usually the culls. The culls are often as pure-bred as the best, but not being fully up in points for exhibition they sell at a lower price than those which are reserved for the shows. In writing to a breeder, therefore, always state what you wish to do with the birds you desire to purchase. Good stock demand good prices, but in a short time from now the yards will be crowded and the breeders will sell your birds at much less than the prices asked in spring. In fact, it is often impossible to procure stock in the spring at all.

Poultry on the Farm.—Compared with the keeping of poultry as is now done, it is surprising that in by-gone years farmers were not content to have fowls on their places at all. Every season the minks, hawks, owls, and rats reaped an annual harvest of choice chicks, while the number of eggs lost, or destroyed by animals, was beyond estimate. The hens were allowed to run at large, to create filth in the barns and stables, to pick up all they received, and roost upon the limbs of trees or wherever a lodgment could be found. Despite the fact that the farmers gave very little attention to poultry, yet there were very few farms that did not contain a fair proportion of eggs for family use, and many well filled baskets went to market when other produce was unprofitable. At the present day our farmers have begun to learn that it pays to keep hens in a systematic and careful manner, and that they are most profitable when cared for like other stock. The progressive spirit of the age has compelled better treatment of all classes of stock, and though poultry usually comes in at the end of the list, yet a great improvement has been made and will continue.

Inquiries About Langshans.—Several inquiries have been made regarding Langshans which warrant devoting a special article to them. The first question is for information as to the difference between a Langshan and Black Cochin. The Langshan is an active bird, and can fly, while the Cochin cannot. The Cochin has feathers on the middle toe, which, on the Langshan should not be the case. The Cochin has a short, fluffy tail, while the Langshan has long, flowing sickles. The bottoms of the feet of a

Cochins are yellow, while those of the Langshan are pinkish flesh color. Regarding their qualities the Cochin is a good layer, but a persistent sitter when it settles down to that business. The Langshan also sits, but is not so persistent. It lays more eggs than the Cochin, and can be kept in confinement, but it is not so suitable in that respect as the Cochins. Both breeds are excellent for the table, and are really fine birds for market, but a foolish prejudice against dark legs injures them in that respect. When dressed, the skin of the Cochin is a golden yellow, but that of the Langshan is white. For home use they cannot be excelled.

Will it Pay to Hatch Broilers in Summer?—Those who have hatched chicks early and secured the best prices will not be easily satisfied with the low prices that usually prevail in summer, but chicks may be profitably hatched at this season if a large number are brought out. The egg from which the chick is to come will cost one cent, and the food should not exceed five cents per pound. At thirteen weeks old the chicks ought to weigh at least two and one-half pounds, and three pounds is not too great for that age. Now, it is seldom that a three-pound chick sells for less than fifteen cents a pound, but we will estimate at two and one-half pounds weight, at ten cents a pound, or twenty-five cents for each chick. The total cost for eggs and food will not be over fifteen cents per chick, leaving a profit of ten cents. This seems very small, but it is a large *profit*. The investment is only fifteen cents, and the increase 66 2-3 cents in thirteen weeks, or 333 1-3 per cent. in one year. But, then, there is the labor. Labor, however, is what you are really selling. If, by expending fifteen cents, you can sell one dollar and twenty-five cents worth of labor, it is a good investment, even when viewed in that light, for the figures show it to be the case.

English and American Methods.—Whether in breeding cattle, sheep, or poultry, the English pay more attention to the carcass than to the productions of the animals or birds. While we in America prefer sheep that produce wool, the English give wool but little consideration and aim to secure a large carcass of mutton. They also encourage beef producing cattle in preference to extraordinary milkers. Poultry is no exception to the rule. The English have bred their fowls especially for superiority of the carcass, as in the case of the Dorkings and the low, heavy, vulture-hocked Asiatics. They, therefore, sought to secure the compactness of the Cochin in the Langshan by breeding the latter close to the Cochin shape, while we seek to keep the two breeds as distinct as possible. There are some breeders in England, however, like Croad, who will not have anything to do with the Cochin form, in order to keep the Langshans pure. We have birds in this country better than those in England, as our breeders do not overlook the laying qualities. To keep up the laying qualities should be adhered to, as the birds intended for market may be produced by judicious crossing, for we have not only all the English breeds, but the American varieties also.

Using Thermometers in Incubators.—Just where to place the thermometer in an incubator has been almost as much of a problem as operating the incubator itself. Some who have tried the method, insist that the bulb of the thermometer should come in contact with a *fertile* egg, as the fertile egg, containing a chick, is warmer than one that is infertile, but in comparing the plan with others it has not always proved successful. The

best hatches have been secured by placing the thermometer between the eggs, the upper end slightly elevated, and the bulb half way between the top and bottom of the eggs. If the bulb of the thermometer touches the eggs the heat will be entirely influenced by the heat of the growing chick, which is always fluctuating, at times rising very high and at others decreasing. Besides this, the heat from no two chicks will be the same. That from a strong chick will be greater than that from a weak one. We can safely claim, however, that when the bulb does not touch the eggs, but lies between them, it will more correctly represent the temperature of the egg drawer and the heat will be more uniform. Above all things, however, be *sure* that your thermometer records correctly, as that is the most important matter.

Sacrificing for the Shows.—Some of the best birds in the country are annually sacrificed because they may not be suitable specimens for the show room, and it is a system that is doing more harm to the poultry interests than many suppose. Some of the finest Langshans we ever saw have been disqualified because they had a few white feathers on the feet, and yet not one Langshan in a hundred is free from it, nor does it indicate impurity. At the recent Worcester show the judge thought a certain Wyandotte cockerel worthy of the first prize, yet he did not observe a small feather on one of the legs. In such a case the bird was defective, yet he was considered worthy of being advertised as a prize winner. While it may be necessary to adhere to standard points in order to preserve the purity of the breed, yet it is not progressive to sacrifice an excellent bird simply for a slight blemish on the comb or an injury, for such a bird may be from the same parents as the prize winners, and probably capable of producing better stock than those more fortunate. Our advice is that if you get a superior laying strain, hold on to it. Get well marked birds if you can, but do not sacrifice those that have only slight defects if they have been tried and are good.

How to Clean the Premises.—First remove all the contents—nests, roosts, and boards for catching the droppings. Then slake some stone lime with warm water, and make a bucket of thick whitewash; to every bucket of whitewash adding a tablespoonful of carbolic acid. Apply it *thickly*, outside and inside, and into every crack and crevice, not even overlooking the under part of the roof and the floor. With a sponge apply kerosene to roost-poles, nests, and boards, first cleaning them thoroughly, and set fire to them. They will only burn until the oil is consumed, while the fire may be easily extinguished. This will destroy every egg or parasite on them. They may be again anointed with kerosene and placed in their proper positions in the poultry house. Fill the bottoms of the nests with dry earth, mixing a teaspoonful of insect powder with the dirt. Place finely-cut hay over the dirt, and sprinkle a little insect powder and tobacco refuse in the hay. The house will then be clear of vermin. All filth must be carefully removed, while the old nests should be burned. The yards should now be spaded, so as to render them clean. By thus cleaning the premises disease may be warded off, the houses disinfected and rendered more comfortable for the hens, and a larger number of eggs secured.

Crop-Bound.—This troublesome difficulty is not a disease, but is due to so many different causes that it is impossible to know where the one giving trouble is located. It is simply a stoppage of the passage leading from

the crop to the gizzard. A piece of old rope, a coil of string, an extra feeding of long, coarse grass, old rags, and, in fact, anything that may be compacted in the passage, will cause crop-bound. The hen will be very hungry and eat all that may be placed before her, for the reason that while her crop may be full almost to the point of bursting yet her stomach will be empty because the food cannot get into the gizzard. In such cases draw the skin over the crop to one side, make an incision about an inch in length (not too low down), remove the obstruction, by feeling with the fingers in the passage way (first removing the contents of the crop), and sew the skin together again. The skin which has been drawn to one side will slip over the cut, the hen will feel relieved, and no harm will result. Sometimes the food, if clammy, or easily compacted, will not pass into the gizzard. Give the birds a teaspoonful of lard, and work the contents of the crop with the hand until the hard lump has softened, and it may effect a cure, but it is always better to cut into the crop rather than allow the fowl to starve. You can never know the real cause of the difficulty until you *see* the obstruction.

How to Select Your Young Rooster.—When one has a yard full of young roosters it becomes rather difficult to make a selection, especially if they are somewhat uniform. The majority of persons usually select the one that is larger than the others, especially if he has his hackle and tail. The proper mode to select is to observe which of them are *growing*. The forward cockerels have ceased to grow after donning their full plumage, but the one that is large and looks like a great over-grown chicken, but has no hackle or tail, will be larger than the others. It is best to select a medium-sized cockerel, but *activity* should be the main object.

Hens in Wet Weather.—The damp, wet seasons are more injurious to the fowls than is the cold, dry weather of winter. Dampness is the source of one-half the diseases. It is not so much the amount of water they come in actual contact with as the constant humidity of the air and dampness of their surroundings. Damp weather means an accumulation of mud and filth in the yards and coops, which is always in a state of decomposition, and a source of annoyance. To avoid this difficulty the coops should be cleaned daily and the floors sprinkled with fine, dry land plaster, or dry earth. The yards should be drained, and every precaution used to turn the water away. In the case of chicks they quickly succumb to dampness. The moisture is constantly being evaporated, thus carrying off the animal heat. The same is true of adult fowls. They do not get wet so far as the water passing through the feathers on their backs is concerned, but the under parts of their bodies have no protection against the water on the ground, which soaks in and chills them, the result being roup and other diseases which arise from colds. A few pinches of red pepper in the food is excellent for them at such times.

Combination Summer Foods.—Corn should be left out of the food altogether during the summer, as it is too heating, and largely conduces to fat. If the hens are fed twice a day the meal in the morning should be composed of whatever is intended for them other than whole grains. An excellent mixture is ten pounds of ground oats, three pounds of bran, two pounds of middlings, and two pounds of ground meat (or meat in any shape). Scald with boiling water, and add a teaspoonful of salt for every twenty hens. A tablespoonful of the mixture in the morning is enough, as it should be the aim not to give as much as the hens require, so as to

compel them to work during the day. If it is desired to give them a noon meal let it be grass, which is better for them than any kind of concentrated food. At night, whole wheat or oats should be given. By combining the food as directed it will furnish the hens with all they require, as the compound contains the elements desired for egg production. If the hens are to be fatted for market give corn and corn meal plentifully, and feed four times a day. Be careful not to keep the laying hens in the same yards with those which are intended to be sent to market.

Heat as a Source of Growth.—Take two broods of chicks and allow one to run with the hen wherever she chooses to lead them, and keep the other brood in a *warm*, dry place. The chicks that have plenty of warmth will grow much faster than the others, although both broods may be fed at the same period and on the same kind of food. Chicks love warmth. Even during the middle of a warm July day the chicks will nestle under the hen and seek her hover. If the weather is damp, though warm, the chicks will stay under the hen as much as possible, but if they have a dry place, which is warm and comfortable, they will eat more and grow faster. Heat can be provided cheaply, and represents so much food. The warmer the chicks are kept the less food will be required for the creation of animal heat, consequently the greater the heat provided (consistent with comfort) the faster the chicks will grow, as the larger portion of the food will be converted into bone and flesh instead of a loss being sustained in directing so much of it to the purpose of warming the body. This accounts for the more rapid increase of incubator chicks as compared with those brooded by hens. The incubator chicks are always in a dry, warm place, and they grow fast, as well as being free from colds and diseases.

Amount of Food Required Daily.—In an experiment in England for the purpose of determining the daily amount of food consumed by different breeds of fowls, the following was the result:

Dorkings	6	ounces	391	grains.
Games	4	"	275	"
Buff Cochins	17	"	296	"
Langshans	7	"	31	"
Dominicks	4	"	336	"
Brown Leghorns	4	"	398	"
Hamburghs	4	"	120	"
Polish	4	"	28	"
Guinea Fowls	4	"	182	"

It will be seen that the Buff Cochins eat much more than any of the other breeds, and to show the increase of weight in proportion to food consumed it may be stated that each gained daily as follows for twenty days:

Dorkings	138	grains	and laid	130	eggs	per year.
Games	92	"	"	100	"	"
Buff Cochins	77	"	"	115	"	"
Langshans	123	"	"	115	"	"
Dominicks	92	"	"	110	"	"
Brown Leghorns	107	"	"	190	"	"
Hamburghs	92	"	"	239	"	"
Polish	46	"	"	98	"	"
Guineas	—			75	"	"

It will be noticed that the Hamburgs gave the largest number of eggs and the Brown Leghorns next, but the Dorkings and Langshans made the

largest daily gain in growth, while the Cochins, though consuming enormously of food, did not show its effects either in eggs or the first twenty days' growth. Taking the three highest for weight at six months, the following was the result:

Dorkings weighed 10 pounds, 1 ounce, and 685 grains.

Buff Cochins weighed 9 pounds, 13½ ounces.

Langshans weighed 10 pounds, 5 ounces, and 437 grains.

The greatest gain was made by the Langshans, but for the food allowed the Dorkings are entitled to the honor. We give the above as the result of experiments in England. In this country the conditions would be reversed perhaps. Hamburghs seldom lay as many as 239 eggs, but in England the climate seems best adapted to both Dorkings and Hamburghs. In estimating the result the *kind* of food should be considered, which was not given. We use corn largely in this country, and hence experiments here would be conducted differently. Chicks when hatched usually weigh about one and one-half ounces, those from the large breeds having an advantage. We hope some of our readers will conduct similar experiments.

Vigor in Chickens.—The number of complaints that eggs do not hatch are legion, and every season witnesses failures from many different causes. The chief difficulty in the way of securing strong, healthy chicks is usually lack of vigor in the breeding stock. Although each year the chicks show inherited weakness, yet the miserable scrub roosters may be seen on every farm. It may be safely claimed that there are some who do not care anything about the kind of rooster used, and yet upon the characteristics of the male depend the uniformity and excellence of the chicks. In-breeding is so generally allowed as to make it a matter of surprise that eggs hatch at all. It is comparatively cheap to change the males every season. We do not mean that such changes can be effected by simply trading eggs with a neighbor, for in that manner but little new blood is brought into the flock, but by purchasing eggs or males from a good strain of pure breeds. If eggs are purchased, of course a year's time will elapse before the breed so introduced can be made serviceable, but it is a cheap mode of making a beginning. The chicks from a strong, vigorous, pure-bred cock will be uniform in appearance. They will be nearly all alike, and the eggs from hens running with such a cock will usually hatch well. One-half the chicks that die in the shell are too weak to work their way out before they perish, and the apparent mystery is not difficult of solution. Get strong, vigorous cocks, and there will be more chicks hatched.

About Poultry Houses.—If you need a new poultry house think about it in season, make your plans, decide what you need, how much you can afford to expend, etc. If you put everything off to the last minute, the house will go up in a hurry, *i. e.*, if it goes up at all, and ten chances to one that it will not be what you want at all. I know more than one poultry keeper, who put up buildings in a hurry, were not satisfied with them, and afterwards spent more in improvements than the right kind of building would have cost in the first place. And come to think the matter over, a good deal of the expense, and a good many failures in this poultry business, come because people blunder ahead before they know what they really want. I don't believe in taking "forever and a day" to think things over, but I do believe in looking an inch ahead before you jump a foot.

"But I can't afford to build an expensive poultry house," is what one

farmer said to me when I tried to convince him that a new poultry house would add to his fowls' comfort, increase his profits, and improve the looks of his place; and I dare say that is what a good many who read this will say. Well, who asks you to build an expensive poultry house "with all the modern improvements?" I don't. Build a comfortable house; you can afford that. Secure comfort first, and let the improvements for looks come in later whenever you can afford it. I believe "vain pride" stands in the way of a good many—keeps them from putting up such a fowl house as they can afford. A neighbor has a nice house for his poultry, and others won't build until they can put up one just as good or a little better. Outwardly they make fun of the neighbor's "fancy chicken house," but inside they keep on thinking that just as soon as they can afford it, they will "take the shine off" his house. But a good many more won't spend any money on a poultry house, because they honestly believe it "won't pay." To all such I say: Put up a comfortable home of some kind, take care of your poultry, and you will find out before you are a year older that comfort for poultry *pays*.

Build a Shed.—But if you have already a comfortable poultry house which affords ample room for roosting and laying, but not much to spare, it will pay you to put up a shed adjoining, so that the fowls can have some place to loaf and scratch next winter, when they cannot roam out of doors. I don't mean an open shed, but one that is tight enough to keep out rain, snow, and the "coldest of the cold." After you get it up, put in a lot of dry earth and gravel, and on top of that, chaff and any litter of that kind you can get. If you live where you can get sand, put that in instead of the earth.

Don't Crowd.—This piece of advice is meant particularly for those who kept a flock of early pullets last winter and made them pay a good profit. They now have the "hen fever" (*i. e.*, the people who kept the pullets have it), and they will figure thus: Last winter I kept 30 pullets, and they paid me clear profit of a dollar a head; this winter I will keep a hundred, and make a hundred dollars. That's all right; keep a hundred pullets, and make a hundred dollars; but for mercy's sake, don't try to keep a hundred, or even fifty, in the room where you only kept thirty before. If you crowd that way, the chances are that you will make a hundred dollars out of pocket. There is too much of that kind of poultry keeping, and it is the kind that don't pay. If you have only room for 30 fowls, don't try to keep more than that number until you can provide more room. Keeping two fowls in the space that should be occupied by one has never yet paid, and it never will. When the people who have the 1,000-hen fever get that idea well into their heads, they will either give up the keeping 1,000 hens, or else provide room for 1,000.

Look Out for Cholera.—The latter part of August and fore part of September is the time when cholera "breaks out" in places where it can obtain a foot hold; but it won't break out if it can't get in; and it can't get in if you keep it out; and you can keep it out by taking proper sanitary precautions. I know poultry raisers who have kept fowls for years without even having a single case of cholera on their premises, while their neighbors' fowls died off like sixty or seventy. And the lucky ones did not "keep their fowls well" by dosing with "cholera pills" and "powders;" they saved them by simply taking care of them. Strict cleanliness about

the houses, yards, coops, will do more towards keeping the cholera away than all the cholera medicine ever invented. Nine-tenths of the "sure cures" advertised to cure and prevent cholera are worthless, or nearly so; and yet some of them do good, because in the accompanying "directions" there is good advice about cleaning and disinfecting, and the people who buy the remedies follow the directions because they have paid for them.

The Turkeys.—If you have turkeys that you intend for the Thanksgiving market, be sure that you keep them growing right along; if they do not come home every night with full crops, fill said crops up with grain of some kind. You can't half starve a turkey from the time it is weaned until a few weeks before market time, and then by extra feed make an extra bird of it. Not much. The very best way, in fact the only way, to grow first-class market turkeys is to keep them growing all the time.

Get Them Out.—We mean the half or two-thirds grown chickens that have been huddling in the nursery coops. If you have any shed or large coop that will accommodate them, teach them to roost in it; but if you have no such place and cannot or will not make one, better let the chickens roost in the trees or on the fence, instead of crowding into coops that are much too small. If you have any idea such coops are comfortable places when the chickens are huddled in them, just go out and observe with your own eyes and nose. You have probably read a lot of nonsense about the danger of crooked breast bones and wry tails if the chickens are allowed to roost much before they are full-grown, and think you are doing the correct thing by keeping yours on the ground; but you are wide of the mark. If the perches are of the proper width—wide enough for the chicks to sit on, and far enough from the side of the coop or house, there is not the least danger of deformity, at least no more than when the chickens are allowed to crowd together on the ground in a coop. I have tried both ways, and know whereof I speak. And after you have taken the chicks from the coop, clean up where the coop stood. I am moved to give this piece of advice, because so many farmers leave their chicken coops just where they happen to be, uncleaned, until the next season, and in damp days and about dusk in "dog days," the stench from those coops is almost unbearable. Often the farmer wonders "where such a smell comes from," but never once thinks of the accumulations in the abandoned chicken coops. Let me tell you, if you keep fowls and do it well, you must always keep your eyes open and do things in season. Neglect causes a big share of the trouble, disappointment and loss that occur in poultry keeping.

New Breeds.—The "woods are full of" new breeds, which their admirers are booming with all the might of printer's ink. We have the White Plymouth Rocks, the White Wyandottes, Dingos, the Motley Bells, the Pea Comb Plymouth Rocks, and perhaps some others that are not yet named; and if we believe all that is claimed for them, each one possesses more good qualities than any other breed of fowls on earth. But farmers who have no money to experiment with, had better go slow; if you have fowls of well established breed, those that give good returns for the food and care bestowed, don't trade them off until you know you are going to get something better. Sometimes it pays to "make haste slowly."

Feed Them Out.—We mean the small potatoes and any other vegetables that you can neither use for your own table nor sell. Boiled and mixed with bran, they make an excellent and cheap morning feed for all kinds of poultry. When prepared for fowls that are confined to yards add some ground meat. A great many of the early sweet apples that would otherwise rot on the ground, could be profitably fed to poultry. The fact that they may be wormy won't make any difference to the fowls, but if you get these wormy apples off the ground and use them for chicken feed and hog feed, it will make a difference to you in more ways than one.

Feather Eating.—Feather eating is one of the most disgusting things with which the poultry breeder has to contend with, and one which is the most difficult to cure. Fowls which have free range, not being restricted in exercise room, seldom, if ever, contract this bad habit, and it is principally those which are kept in small enclosures which find employment for their lazy hours in plucking the feathers from their own and other birds' bodies.

We, this spring, had a fine flock of Plymouth Rocks which conceived an unhealthy taste for feathers, nearly denuding their bodies, and giving them a very shabby and woe-begone appearance. We tried to cure it by giving them plenty of green food and an abundance of fresh gravel, in which we raked in oats and wheat, to scratch over; this only partially remedied the evil, some of the birds still persisting in their evil ways despite all our care. As a last resort, we removed them to the farm, where they had all the room they wanted, with an abundance of nice, fresh grass and plenty of shade, and now they do not show a trace of their former bad conduct.

Nothing like liberty, and fowls like it as well as their masters. To confinement is due many of the troublesome and dangerous diseases and disorders to which fowl flesh is heir to, and of which we all were in ignorance until it became necessary to so confine them to breed several kinds pure on the same place.

Quinine for Chicken Cholera.—I have found by experiment, writes a lady of Oswego County, New York, that quinine is a good remedy for chicken cholera. The sick fowls have fever, looseness of the bowels and droop and die in about three days. Flatten a small piece of dough, lay quinine upon it, in quantity about the size of a kernel of corn, and fold the dough over it into a pill. As soon as the fowl is seen to droop and refuse to eat, separate from the flock, put in a cool place, and give the pill. Give one every day for three days. If very bad, two may given in a day, one in the morning and another in the evening. They will get well in three days, sometimes in one. When they begin to eat, give bread and milk or water. This is a sure remedy if given in time, and entirely harmless.

Different Breeds of Turkeys.—There are six breeds of turkeys: Bronze, Narragansetts, Black, Buff, Slate and White. There may be others possessing local names, but the above only are recognized as pure, distinct breeds. The Buff, Slate, Black and White derive their names from the color of their plumage. The Bronze and Narragansett are nearly of the same size and somewhat alike, the former being a dark bronze in color, with penciled feathers of light brown in the tail, while the color of the Narragansett is a rich, metallic black, with brown penciled bars also on the tail. So far as the merits of the different breeds are claimed, the Narragansett and Bronze are classed as the largest, and the White Holland as

the best for laying. An excellent mode of grading up a common flock is to begin with a White Holland gobbler, mating the hens from the cross with a Bronze, following with a Narragansett, and then alternating each succeeding year with the Bronze and Narragansett. By so doing the young stock will be stronger and more vigorous, in-breeding will be avoided, and a larger number of young turkeys be raised, as many of the difficulties in the way of raising young turkeys may be traced to in-breeding.

Breeds of Fowls.—*Andalusians.*—Black Cochin, Buff Cochin, Partridge Cochin, Pea-comb Partridge Cochin, White Cochin, Dark Brahma, Light Brahma.

Crevecœurs.—American Dominique, White Dorking, Colored Dorking, Silver Gray Dorking.

Frizzled.—Black Game, Black-breasted Red Game, Brown-breasted Red Game, Red Pyle Game, Silver Duskwing Game, White Game, Yellow Duskwing Game, Sumatra Black Game, Black Hamburgh, Golden-penciled Hamburgh, Golden-spangled Hamburgh, Silver-penciled Hamburgh, Silver-spangled Hamburgh, White Hamburgh.

Houdans.—Black Java, Mottled Java, La Fleche, Langshan, Black Leghorn, Rose-comb Black Leghorn, Brown Leghorn, Rose-comb Brown Leghorn, Dominique Leghorn, Rose-comb Dominique Leghorn, White Leghorn, Rose-comb White Leghorn, Black-breasted Red Malay, Plymouth Rock, Bearded Golden Polish, Bearded White Polish, Bearded Silver Polish, Buff-laced Polish, Golden-laced Polish, Silver-laced Polish, White-laced Polish, White-crested Black Polish, Rumpless Russian, Silky, White-faced Black Spanish, Sultan, Wyandotte.

Bantams.—White-booted, Black Game, Black-breasted Red Game, Red-breasted Game, Red Pyle Game, Silver Duskwing Game, White Game, Yellow Duskwing Game, Black Sumatra Game, Golden Delight, Japanese, Pekin or Cochin, Rose-comb Black, Rose-comb White, Silver Sebright, White-crested Winged Polish.

Pigeons.—Few are aware that pigeons can be kept at a large profit. One has only to note the quotations of 30 to 75 cents a pair, or dine at a first-class restaurant and pay 75 cents for a squab, or note the item of 900 dozen squabs consumed in 90 days at a first-class hotel, to be convinced that the common Rock pigeon is by no means to be despised.

Mr. ——— informs me that his squabs averaged 22½ cents each, and he keep several hundred old birds. He keep them housed during seeding time; then they fly at will and gather a large share of their living, he feeding them at four o'clock or thereabouts. The males sit during the afternoon to liberate the females. By feeding them at four o'clock the females are sure of a full crop to sustain them during their long vigil of incubation. We believe that 500 pigeons would pay a man well for his year's work in caring for them.

Some of the fancy pigeons are very large. Of the Runt breed, Dr. Cook showed a pair at New York that stood twenty inches high and measured eight inches across the backs.

It Cannot be Overdone.—It is a hard matter be correctly estimate the amount of poultry in the United States, or the average annual consumption of eggs and chickens. Some years low prices prevail, but the period of low prices is gradually getting shorter each year, and higher prices are reached in winter now than were in former years, which shows that the

price of poultry products is steadily tending upwards, and there is absolutely no danger of having the business overdone. It is a product that cannot be "cornered." Farmers in general, and nearly everybody that has room in their yards, have a flock of chickens. Farmers are increasing their stock and are beginning to realize that there is considerable profit in poultry, when properly managed. They are also adding to their conveniences for keeping fowls, since they have discovered that there are much greater returns for the money invested in them than in any other kind of farm stock. Good, fat, well-rounded chickens, ducks, turkeys and geese will always find ready buyers. The market cannot be overloaded and prices run down to any great extent, for as soon as prices begin to decline, the people will buy and eat more chickens, and the prices will quickly go up again; and even if there is too much poultry marketed in one place, it can easily be sent to other places and larger markets.

The Grateful Duck.—While at work in the garden, I heard quite a quacking of ducks and splashing of water, so much so that I concluded to investigate. I found a mother duck with a brood of four or five on the water, while above were two large hawks, endeavoring to make their dinner off the brood. The mother duck would gather the little ones under the thickest underbrush and make fight as best she could, flapping her wings and quacking, or rather squealing, while the hawks above seemed wholly bent on their prey. You should have seen the apparent gratitude shown by the mother when I shot and killed one of the hawks, scaring the other away. The firing of my gun did not alarm her at all, for she swam off quacking lowly, as though commending me for my timely aid.

When to Begin With Incubators.—The best month for beginning with incubators is November, so as to have the first lot hatched by the latter part of that month. The chicks will then weigh about a pound and a half by the first week in January, when the upward turn in prices will begin. Just what the prices may be cannot be anticipated, but they depend upon the quality. The chicks should be sent to the market dressed. The cold weather will be too severe for the shipment of such young stock, as some of them may die on the route. There will probably, at that season, be a difference of ten cents a pound in favor of dressed chicks, which will more than pay for the cost of dressing them. As there will be no danger of decay in winter, they will keep for any length of time, and the commission merchants' charges will be lessened.

The object in hatching early is to not only have the chicks of a proper size to be sold as soon as the demand begins, but also to make up for any deficiency in growth, as one-pound chicks are usually in demand when the broilers (or spring chickens) first come in. Another point is that the work is usually done in winter, and will not interfere with other operations, which in one respect really lessens the cost, as many persons are often idle during that time. What is it that causes the prices for chicks to be so high? It is the care and work required to hatch and raise them, and so you must consider that this attention, which the consumers are willing to pay for, must be bestowed. It does not cost over five cents per pound of meat in the shape of broilers, and yet the prices often reach fifty cents per pound, or ten times the cost, but this extra sum is what the producer obtains for his labor.

Another reason for beginning in November is that should a failure occur

it will not be too late to still get the high prices, as they reach into April and May, and beginners have an opportunity to experiment and correct all mistakes.

Capons for Market.—Capons are salable the entire year, but there are seasons when they are more in demand than at other times. They come into market early, along with broilers, and the prices range from 25 cents to 50 cents per pound, according to quality. Now, the *quality* is the main point, and the breeder should endeavor to keep special breeds for capons. In the first place the capon should be as large as possible, the larger the better, and the Asiatics should be used in order to impart size. Crosses are excellent, one of the best being Dorkings crossed on Brahmas or Cochins. Plenty of time should be given a capon to grow, and the chick should be hatched early, so as to have the capon a year old when it reaches the market. Therefore the one who understands using an incubator will have an advantage in that respect. If you have only common hens or small breeds, begin by weeding out all the Leghorns, Hamburghs, Black Spanish, and other small crosses, and use a Brahma cock with them. This will give you four pounds more weight than you would have with common chicks, or rather, those mixed with small breeds, and the next season grade up with a Dorking. The operation is not easily explained in a short article, but we are pleased to note that instruments are now one-half as low in price as formerly, while the improvements made in their construction enable even a "green-horn" to succeed, the horse-hair being now done away with. There is as much difference between the flesh of a capon and that of a cock, relatively, as between that of a boar and a barrow. Turkeys may also be caponized, which will greatly increase their size and price, as they are very rare. The operation is performed when the cockerels are about four months old, and though it is apparently cruel to a novice, yet the birds are not at all affected by it, and begin eating as soon as it is performed. As only a thin skin is cut the operation is quick and almost painless, being much less injurious than the dubbing of game fowls.

Light Brahmas.—The light Brahmas have been bred so uniformly that the majority of persons cannot tell a pure-bred one from a crossed bird. Every bird that is white and has feathered legs, is supposed to be a Light Brahma, but it is really difficult to breed them fully up to standard requirements. They should have yellow legs, with profuse feathering down the sides of the shanks, extending to the ends of the outer toes, with the middle toe well feathered also, but not the inner ones. The beak is yellow, with a dark stripe down the upper mandible, and, when they are chicks, the darker this stripe, the darker will be the hackle and tail. In the cock the hackle should be white on the upper part, the remainder having a black stripe running parallel with the white, the black being in the center of the white to the end. The hen's hackle is not so full, and the black of the hackle is distinctly separated from the white of the back. The wings are small, the tail black, and the thighs heavily covered with fluff.

The Brahmas have pea combs, or a larger comb with two smaller ones, the whole making a very small comb, resembling an open pod filled with peas. The cock should weigh twelve pounds and the hen ten. The cockerels weigh ten pounds and the pullets eight. The breast should be full, the back rather flat. and. to distinguish it in shape from the Cochins, it

should not be too compact. They lay well, as their small combs protect them against frosted combs in the winter, while their heavy feathering renders them hardy and well adapted to cold climates.

The Best Layers.—It is not an easy matter to know which of your hens are the best layers. We admit that some of the hens will lay more eggs than others, yet to find out which are the more profitable the record cannot cease with a few hens. Nor is the greatest profit derived from the hens that lay the largest number of eggs, but from those that lay the greater number when prices are high. There is more profit in two dozen eggs at thirty cents per dozen than from three dozen at twenty cents a dozen, although the sum—sixty cents—is the same for both lots, for the reason that the *cost* of two dozen is less than for the three dozen. A hen may lay well from April to July, and apparently be an extraordinary layer because she lays an egg every other day, but after awhile she may do but very little, and another hen, that does not seem to be doing her duty, slowly reaches the number and still keeps on laying. The record should be therefore kept for a year, and an average for each month made. The best hens for the year should then be retained as breeders, from which to hatch the next season's pullets, and they should be mated with a cockerel of a good laying family, so as to secure better progeny than the parents. The prices, number of eggs laid, number of chicks hatched, and amount, in value, produced by each hen, should be noted, so as to be assisted in the selection by a knowledge of the characteristics of each, and merit will be the guide.

Soft-Shelled Eggs.—If your hens lay soft-shelled eggs it is an indication that there is a lack of lime in the food. They should have ground shells or bone, with a change of food. But the soft-shelled eggs do not happen because the hens are not supplied with lime always. It is often due to the hens being too fat, or from lack of exercise. In such case the food should be reduced to grass during the day and oats at night, giving them, however, plenty of litter of some kind in which to scratch. It is the poor condition and the over-fat condition that causes many of the difficulties with poultry. Whenever you get a soft-shelled, misshapen, or double-yelked egg, or the eggs do not seem to hatch, you may conclude that your hens are too fat.

High Ceilings to Poultry Houses.—One of the mistakes made with poultry houses is that of having high ceilings, under the supposition that there is not enough ventilation. Now it is well enough in summer to have a high ceiling, but the cheapest and best houses are those that are very low at the rear and open to the sun at the front. Two feet at the rear is high enough for winter, as such a house protects against draughts and frosted combs, and enables the fowls to keep themselves warm, but in summer it should be open in front, facing the southeast. In winter it may be left open during the day, at the front, and closed at night.

Short, Stocky Birds.—The way to get short, stocky birds is to hatch them in the fall. If you take a pair of birds and use the eggs from them in the spring the result will be the same kind as the parents, but if the eggs are hatched in the fall the chicks will grow until frost sets in. When spring opens they will thicken and grow chunky, but the legs will be no longer than they were when they stopped growing in the fall. Try the experiment, and it will surprise you to note so great a difference in birds hatched

in the spring and in the fall, and from the same parents. It is because the longer the growing season the better the opportunities for obtaining height.

Ground Corn and Oats.—Whenever ground oats can be procured without the corn being mixed with it the feed will be better than when the corn is in excess. Some millers add more corn than oats. Such food may answer well for milch cows, but not for chicks. The practice is to grind the corn and oats together. If it can be done, always procure the ground food in separate bags and mix the materials in quantities and proportions to suit the requirements, as fowls should not all be fed alike.

Enemies of the Barnyard.—There is greater loss every season from enemies than from disease. The minks, hawks, owls, dogs, and cats play havoc with the stock at a time when the farmer is not aware of it. The majority of farmers will agree with us when we state that during some seasons they feel certain they have hatched several hundred chicks, but when the chicks are ready for market, only one-half of them can be found. The farmer cannot tell where they have gone, or how they were lost, but he knows that they are gone, though at what age or through which source always remains a mystery. The enemies work secretly. They carry off the chicks one by one, and the loss is so gradual that it is not noticed.

How to prevent such loss is not easily explained. No two farms are situated alike, and the shotgun and watchfulness must be the safeguard. The greatest depredator is the family cat. She will often allow the chicks to roost on her back and eat with them from the same dish, for she knows that they are protected; but the peaceable and fraternal cat becomes a tigress when no one is looking, and many little chicks become her prey, while at the same time she professes to tenderly care for them. No cat can be trusted. All kinds of birds are the natural prey of cats. A cat *will* devour young chicks, no matter how well she may behave herself apparently. Rats are also very destructive, a single rat often killing every chick hatched, and he must be caught, even if all the floors are to be torn up, or it will be a waste of time to attempt raising chicks. Such rats are too sly for cats, traps, or poison. They must be hunted down, and no expense must be spared until they are destroyed. Minks can be kept out of the poultry house, and so can the owls. Dogs usually kill chickens when they become half starved and are ill-fed. Foxes no longer do much damage near the barnyard. The chief enemies are the hawk, rat, and cat, the latter being the most destructive.

Clay and Sandy Soils.—Poultry thrives best on light sandy soils. The reason is that the rains carry off the filth by leaching it down below the surface, scattering it, and lessening its effects. On heavy clay soils, where the surface becomes hard in dry weather, and sticky after a rain, the filth is first mingled with the top soil during the rain and then hardened with it as soon as it dries. Being in the soil, and near the surface, the heat from the sun causes decomposition, which in turn invites disease. The cholera and gapes are the result of the accumulated filth; disease arising at a time when least expected. Such yards cannot be kept clean unless the top soil is occasionally removed, or turned under with a spade, which is a very laborious undertaking when there are large flocks kept. The poorest, lightest, white sand, which has only a sandy subsoil, is the best for fowls.

There is one objection to light, sandy soils, however, which is the

absence of grass. Every kind of soil possesses some advantages as well as disadvantages. Clay soils, although retentive of filth, permit of the growth of plenty of grass, but a grass plot is quickly destroyed unless there are changeable yards. The birds being kept in one while the grass is growing in the other, and then alternated from the pastured plot to the one in grass, which allows the turning under of the soil and reseeding it.

But while the sandy soils may not be adapted to grass, yet quite an amount of green food can be grown thereon, such as oats, rye, young millet, kale, radish, mustard, etc. Such crops come quickly, as it is not necessary that they be matured. If only a few inches high they serve the purpose better than when fully ripe, and as the fowls are constantly enriching the soil they virtually assist in growing their own green food, while the cultivation of the soil purifies it and prevents disease.

Utilizing Bulky Refuse.—A large amount of valuable material may be utilized if cooked. Pea-pods, string-beans, apples, squashes, and many other articles, if placed in a pot and boiled until done, will furnish a quantity of food that is really more serviceable than too much grain. Ducks and geese may be kept at but little expense by such mode of feeding, while turkeys and chickens will appreciate the change at once. Turnips and carrots, if cooked and fed to all kinds of fowls, will furnish a cheap and nutritious diet, promoting the health and preventing too much fat. In feeding such material no grain is necessary except at night, when whole corn, wheat and oats should be given. One of the most valuable foods is cooked potatoes and sour milk. If this is fed, being first thickened with ground oats, it will cause the hens to lay more eggs than when an exclusive grain diet is given. Fowls should have plenty of bulky food if they are to be made profitable.

Breeding for Market.—While it is admitted that the markings and plumage of a bird is an index to its purity, yet we often see the sacrificing of some of the best in the flock, because of a slight defect that does no injury, but which serves as a disqualification in the show room. This practice has been very damaging to the value of the breeds for utility, as the plumage in no manner affects the laying qualities or adds to the attractiveness of the fowls for market. And yet, without a strict adherence to some definite rule by which the breeders of thoroughbred poultry can be guided, our flocks would degenerate into dunghills and their characteristics as breeds be entirely lost. But there is a limit even to the fixed outward indications, and when once the desirable object has been obtained of giving them a uniform exterior the more important essentials should not be overlooked. Poultry is destined to serve a grander purpose than that of being petted. The majority of those interested have no inclination to devote their time to the breeding of beautiful birds only, but prefer to realize a profit from carcasses and eggs; and hence any attempt to sacrifice vigor and strength, in order to secure a straight comb or a certain shade of color will in the end prove detrimental. This is proved already from the fact that while the fancy breeders have been more exacting in their standard requirements than any other class, yet, they have not succeeded in securing a flock of uniform show birds from the best of their prize-winners, while the Berkshire swine-breeders, who give but few points to color marks, have only a small number of culls in their herds.

The farmers who raise poultry for market, however, owe much to the

breeders of fancy poultry, for despite all mistakes they may have made, they have preserved the purity of the breeds, and as their standard is only in its infancy, the time will come when all the breeds will combine not only the characteristics of utility, but convey also the outward evidences of the purity of the stock.

Select those that come up to the standard in points, if you can, but do not discard a good specimen of robust constitution for a slight defect. Be liberal in allowing a few fowls to have drawbacks if such imperfections are such as to cause no injury to the offspring, but above all, select for vigor and strength. It is not always the largest fowl that is the most vigorous, but the one with full bright eyes, heavy bone, compact body, and quick movement. In plumage see that the color of the hens harmonizes with the color of the cock. If the hens are too dark allow the cock to be somewhat lighter, and if the hens are very heavy in the body use a medium-sized cock. Too much weight is not desirable in fowls, although many boast of weight in preference to other qualities. The chief object, no matter which breed is used, should be vigor and activity. An overgrown, excessively fat fowl is a nuisance, and should not be tolerated.

Breeding for Eggs.—To keep hens for laying purposes, where eggs for market only are desired, is a different matter from keeping hens to provide eggs for hatching purposes. It may safely be said that for market purposes, laying, and hatching, the conditions vary. It is a well-known principle in breeding, that the female must be in a proper condition to become fruitful, and this rule applies to the hen as well as to the animal. The fat Shorthorn cows are often barren, while those that produce large quantities of milk and butter, such as the Jerseys, Holsteins, and Ayrshires, usually bear calves every year, as the production of milk prevents overfatting. In making up a pen for breeding purposes, therefore, the poultryman must consider two or three points that must be observed in order to secure good hatches when the eggs are incubated. In the first place, the eggs from pullets do not hatch as well as those from hens, unless the pullets are early hatched. This difficulty may be overcome somewhat, however, by mating two-year-old cocks with them. Again, while the cockerels may be used in the yards, they should always be mated with hens, and not pullets. The conditions to be observed are to feed a sufficiency of all that tends to provide the constituent elements of an egg, without furnishing a superabundance. By feeding so that the hens must scratch, we bring them under the same conditions by which it is known that a mare kept at moderate work will produce a better foal than the one kept standing in the stable, and pampered. It is true, as has often been stated by those who sneer at improved breeds of poultry, that they are pampered too much, and especially is this true of breeding hens, as eggs from such do not hatch well, and when they do, the chicks are weak and sickly. No amount of lime or oyster shells will prevent soft-shelled eggs from hens overfed, while disease is liable to occur among them at any time.

We often read of hens that lay 200 eggs a year, but such statements do more harm than good, by inducing the inexperienced to believe such to be a fact. Anyone who is familiar at all with poultry knows that during the fall all hens undergo the process of moulting, or shedding of the feathers. This requires usually, about three months, or 100 days. As there are only 365 days in a year, we have 265 days left after deducting the moulting period. If a hen lays regularly, an egg every other day, she will lay 133

eggs, but she will probably lose three months more in hatching out her broods, and even if she is a non-sitter, she will take a resting spell. As moulting is a heavy drain on the system, but few hens lay during that process, though there are exceptions, and where the number of eggs exceed one every two days, it will be found that a corresponding reduction occurs during some period of the year. While we admit that certain individual hens have been known to lay as many as 150, or even 175 eggs in a year, such cases are rare, and if one has a flock of twenty hens or more, he should be satisfied if there is an average of 100 eggs a year for the whole flock, or rather nine dozen. Four dozen out of the nine should realize thirty cents per dozen, three dozen should bring about twenty cents a dozen, and two dozen should realize fifteen cents per dozen in this section, or an average of about twenty-three cents. Of course this calculation may be wrong, but it will convey an idea of what may be expected.

Many poultry raisers provide their fowls with warm quarters, and feed regularly and on a variety, but yet they get no eggs. Such cases are numerous, and we will endeavor to point out a remedy for the difficulty. We well know that if we keep a horse in a stable, and feed him well, that he becomes restless and unhappy, and in order to keep him in good health he must be exercised. With fowls, the winter prevents foraging, and our kind readers go to the coops in the morning and give the hens a good, heavy feeding. The hens being full, are *satisfied*, and have no inducement to ramble, consequently, do not take any exercise, and become too fat. The better plan is to get some chaff, cut straw, leaves, or even dirt, and place it where the hens can scratch in it. In the morning give the hens a mess of warm food, but *only a little*. Now throw some grain into the scratching heap, and make them *work* for the balance of their meal. Feed nothing but what they will have to *work* for. At night feed them all they will eat. The object is to keep the hens busy during the day, but let them go on the roost full. Hens that are compelled to work will lay better, and keep in good health, while the eggs will produce stronger chicks. They should always have a warm mess early in the morning, especially in the winter, but the meal should be so given as to leave them somewhat hungry. Do not feed them at noon, except by putting their food in the scratching heap, and never give soft food in the scratching heap. In other words, keep them scratching for oats, wheat, seeds, and even for ground shells. Give no corn except at night, and give them their night's meal without making them scratch for it.

Eggs for Hatching.—It is often a problem with some why they at times secure good hatches from a portion of the eggs placed under hens, while but poor results are obtained from other sittings. In the first place, in a majority of cases, the trouble is with the *eggs*, and not with the hens. For hatching purposes, especially in the winter, the eggs must be collected as soon as they are laid, in order to prevent them from becoming chilled, for extreme cold is fatal to the germ. No monstrosities in eggs should be used, such as those large enough for two yelks, or that are pointed at both ends. Ordinary, smooth, medium-sized, well-shaped eggs should be selected, and the fresher the better. The nest in winter should be made in a warm location, which is not exposed to drafts, nor is dampness essential, though a moist nest is better for the summer. Avoid giving the hens too many eggs to cover. Common consent has adopted thirteen eggs as a sitting, no matter whether the hen is large or small, but it is more economical in

winter to place only ten eggs under a hen, as she will be enabled to impart more heat to a smaller than to a larger number, as a full nest sometimes does more injury than one but partially filled, owing to the larger number of eggs that become exposed, there to remain until they in turn are changed to the center of the nest by the hen. In extremely cold weather, an egg so exposed is destroyed by the low temperature, but if the hen succeeds in covering a smaller number, she will save the difference in the cost of the eggs required, and also hatch more and stronger chicks. It would be well if the eggs were tested after being under the hen a week; the incubator operators understand this, and why should not the same practice be followed with sitting hens? It is a very easy matter. Make an egg-tester by pasting paper boards together, or by using thin boards, if preferred. A box should be made so as to fit over a lamp globe; say a square box, with a round hole on top and an oval hole on one of the sides. Place the box over the lamp, allowing the chimney to pass through the hole on top; now darken the room, using no light but that from the lamp; hold each egg to the oval hole on the side, and look through the egg at the light. If the eggs are a week old they will appear dark, should they contain chicks, the upper part, or large end, appearing clear; this clear space around the inside of the large end is the air-sack (or air-bladder, as some term it). Below this air-sack the contents of the egg will appear dark. Should the egg contain no chick, it will appear clear, and if compared with fresh eggs, will show the same appearance; therefore always use a fresh egg for comparison. Put the dark eggs back in the nest, and keep the clear ones, cook them and keep them for feeding the young chicks.

Feeding.—The frequent admonition to feed a variety of food is not given simply to gratify the desires or appetites of the birds, but for another purpose. The hen is used by us as a *producer*, and as she cannot produce anything without the material from which to do so, she is useless unless her wants are supplied. She consumes a large amount of carbon every time she inhales air, while the bones, flesh, and nervous system are constantly being wasted and repaired. Should this waste be permitted, without a renewal, the bird will die—starve—although she may be fed liberally, as far as *certain kinds* of food are concerned. If she received nothing but corn, she would become very fat, as corn is rich in carbon, and her body would be kept warm from the heat created; but while fat and apparently in good condition, her bones and tissues would gradually waste away, and she would droop and die without apparent cause. But food of a carbonaceous nature is required also in some form, as the heat of the body is necessary, while carbon is an important constituent of the yelk. Corn contains a small proportion of all the elements of food, but in insufficient quantities for the proper nourishment of a laying hen. We may divide the food proper into three kinds—carbonaceous, nitrogenous and phosphatic—The minerals—lime, soda, potash, etc., must also be included.

Some of the grains, such as wheat, oats, and buckwheat, furnish quite an amount of all the elements needed, lime included, but as such foods are not perfectly balanced with all the hen requires, they serve her purposes for only a short time. Hence, when a chick is growing, the rapid formation of muscle and bone (not fat) requires food rich in nitrogen, which is best given in the form of milk or meat, and it is the absence of nitrogenous food that causes them to die when they are fed on corn meal. The egg is largely composed of nitrogen, the white especially, and the hens that are fed on

meat and milk as a part of their diet, will lay in winter if kept warm. To vary the food means to vary the quality of the articles provided, in order that no element may be lacking, and while it is important that the food be of a varied character, in order to provide all the proper materials necessary, the fowls need succulent and bulky food for dietary purposes. Corn, wheat, meat, etc., are *concentrated* foods, and should be accompanied with grass, or any kind of bulky food, in order to assist digestion, as well as plenty of water, just as a horse needs hay, although he may be allowed all the grain he desires. In feeding a variety, however, do not over-feed. Never allow the stock to get too fat, or the hens will lay soft-shell eggs or none at all. Fat interferes with the generative functions. Always endeavor to make the hens exercise, by scratching for their food. If they are made to work, and are fed on food containing the necessary elements, they will lay, and cannot refrain from doing so.

Are Incubators Profitable?—This depends upon the management, location of the farm, and facility for marketing the fowls and chicks. Where an incubator is operated for *pleasure*, it usually ends in creating disgust, but if used as a source of profit, it may be made to pay. The objections to incubators are that they may sometimes hatch well and at other times fail, but we can safely claim that if an incubator once makes a successful hatch, it allows of sufficient belief that any failure thereafter may be attributed to the operator only. If it can be made to give good results at one time, it should do so every time.

An incubator fulfills only one purpose—supplying heat to the eggs. It cannot hatch an infertile egg, nor can it perform its work successfully unless the conditions necessary for hatching are observed. The majority of persons are very careless in regard to the kind of eggs used. Even well-formed eggs, if from hens that are over-fed, will fail to hatch, and, as the work of the incubator is usually performed in the winter, the chances for filling it with eggs most suitable for the purpose are lessened in comparison with the hatching of eggs in the warm season. Even with all these disadvantages incubators are profitable, for the reason that the prices obtained for chicks hatched early in the season more than compensate for the difficulties.

Take a 300-egg incubator, for instance, and allow only 33 1-3 per cent. as a hatch, and we have 100 chicks. Grant that one-half of them will be lost through various causes, and we reach the market with only 50 chicks. If they are hatched at the proper time they will bring 50 cents each, but at half that figure (and allowing for feed), we derive only $10. It is apparent that so low a sum will only cover the cost of eggs and other expenses; but raise the estimates and allow a hatch of 150 eggs, with a loss of 50 chicks, and we send 100 chicks to market, which, at 25 cents, deducting expenses, gives a clear profit of $10, or the interest on $166 2-3. If, however, they sell at 50 cents each, we have a clear profit of $35, or the interest on nearly $600. Hence, the profit on incubators depends more upon the time of hatching and marketing the chicks, rather than upon the percentage of chicks secured, a fact which the majority of persons overlook.

The Poultry Business and Monopoly.—All classes of stock have for short periods been monopolized, and even at the present day, certain strains or families of horses, cattle and sheep are held at such figures as to be beyond the reach of many. But this cannot happen with poultry. Fortu-

nately, the hen is capable of reproducing a hundred like herself in a single season, and any attempt at monopoly would fall to pieces by force of numbers. It is the only business at which the toiling laborer can engage as a pastime. He may not be so fortunate in securing a pure article of milk, and he may be compelled to place the bogus butter on his bread, but with all the obstacles in that respect, he cannot be deprived of his fresh eggs, if he has even a city lot. Eggs may fall as low in price as five cents per dozen, or they may reach as high as one dollar, but they will not fluctuate in *nutrition*. They will contain as much nitrogen, carbon and phosphoric element as before, and will be in a condition often denied the most wealthy, *fresh*. Eggs and poultry are always in demand, and to attempt to supply that demand is within the reach of all. Monopoly in the poultry business cannot therefore occur, and such advantage is not claimed for all other enterprises.

Operating Incubators.—We perceive quite a number of inquiries regarding incubators, and a few words in reference to them will not be out of place. As to the heat required, it should never exceed 104 degrees, as it is impossible for eggs to be warmed to a greater degree under hens. When under hens, it is well known that the hen often leaves them to seek her food, the time during which the eggs are exposed varying from ten to thirty minutes. This fact teaches us that should the heat in the incubator be lost to such an extent as to reduce the temperature to that of the atmosphere, for a short time only, no danger will occur. It is even believed that this cooling process is essential to the success of the chicks in the shells, but it is certain that they should not be kept cool for a long period. The moisture is only necessary to saturate the atmosphere surrounding the eggs, as water enters largely into their composition.

During the three weeks in which the eggs are subjected to warmth, it must be fully up to 103 degrees on an average. If below this, the chicks will come out weak, and if above such limit, they will become deformed or die in the shell, from too much loss of moisture. Turning the eggs simply prevents adherence of the contents to the shell, though it also equalizes the distribution of the heat. Do not give too much moisture. This may be indicated by the moisture condensing on the shells, and when it happens the chicks will be suffocated, as the water closes the pores of the shells. To give the rules in a condensed form, we will state—

1st. Keep the temperature as near 103 degrees as possible.

2d. Turn the eggs twice a day.

3d. Cool them well once daily.

4th. Place wet sponges in the egg-drawer, from which to impart moisture.

5th. Avoid handling the eggs, using gloves if necessary.

6th. Allow plenty of ventilation in the room where the incubator is operated.

7th. When the chicks are coming out, do not open the drawer, as cool air is then injurious.

8th. Let the chicks dry well before removing them to the brooder.

9th. Select eggs only from strong, healthy stock, rejecting those that are very small, extra large, misshapen, or otherwise imperfect.

10th. Keep strangers away, especially if they wish to inspect the egg-drawer.

11th. Have regular hours for doing all the work.

12th. Do not believe that "a child can manage it."

The rules given are about all there is in managing an incubator. The success depends upon their observance by the operator, who must have more faith in himself than in the machine.

Stealing Her Nest.—Why does the hen that steals her nest usually bring out full broods of strong, healthy chicks? Many have endeavored to solve the problem, but comparison may probably assist us to a certain extent. In the first place, a hen that lays a clutch of eggs in a stolen nest, is usually in a healthy condition, is not too fat, takes plenty of exercise, and her nest is prepared naturally with a view to prevent disturbance. When we place eggs under hens, we know nothing of them. The hens from which they are procured may be excessively fat, and we handle them several times before placing them in the nest. The birds, as a rule, do not like a disturbance of the eggs, especially if they are handled; many of them leaving and abandoning the nests and eggs, if interfered with. But we handle eggs freely, expose them in every possible manner to extremes of heat and cold, and do not stop to consider their uniformity. The hen stealing her nest has a clutch of eggs uniform in every respect, as they are laid by her, and, consequently, if one is good the whole should be equally so. But take the eggs that are placed under hens or in incubators, and they are not uniform, some being large, some small, others dark and thick-shelled, while quite a number may be imperfect.

The hen stealing her nest has every advantage in the quality of her eggs, as she attends especially to the matter of having them fertilized instinctively. Her chicks, all having the same father and mother, are equally as vigorous and strong. But find her nest, take away from the hen the eggs that she has laid, and put others in place of them, and it will prove that it is not so much in how, where, and when she sits, as in the vigor of the chicks, for the reason that we stated—the excellent physical condition of the hen running at large, and laying under the most favorable conditions. When we become so situated in our poultry enterprises as to be able to collect large numbers of eggs from vigorous, healthy stock, there will be no cause to point to the truant hen as an example. To be successful, we must begin with the laying hens, for when they are in condition, the other difficulties will be very easily overcome.

The Common Hen.—We wish to take up the subject of common hens in order to oblige a large number who often make inquiries as to the relative merits of the common stock and pure breeds. In the first place it is no easy matter to define what may be called a common hen. Sometimes common hens are the very best breed of any, as they combine the good qualities of several breeds. The Brahma hen, which lays so well in winter, may be slow in growth and late in maturing, and when bred too close, through relationship, may fail to give satisfaction. The breeder of such fowls will perhaps turn them out to run with roosters of no particular blood, and the result is a mongrel half Brahma and half *anything*, as the case may be, but the Brahma blood is there, and tells in the common stock, which receives the credit for excellence that belongs to the Brahma alone.

One of the best illustrations is to notice the influence of the Houdan. If this breed is crossed on any kind of hen the best qualities of the Houdan seem to be prominent, and the crest and toes (five) will crop out for successive generations, even when bred away from the Houdan for five or six years, the Houdan blood not being more than the one-thirty-second part

and yet it is to the dunghill fowl that the credit for egg production is allowed, while the honors gained by the top-knotted hens which show their remote origin to the Houdan, should properly be ascribed to that source. Again, mix a flock of fowls indiscriminately, common or pure breeds, and allow among them a Langshan cockerel, and every black hen will begin to lay early for the large kinds, which means that the Laugshan blood is a great improvement, but because the fowls were not kept as poor breeds they will be classed as common kinds, and made evidences in favor of the claim that pure breeds may be good, but *common* fowls are better.

Crossing fowls imparts new life and greater vigor when they are closely bred, yet crossed fowls are not necessarily common, but they are so styled, though it is safe to say that there is not a flock of fowls known that has not been improved to some extent by our pure breeds, which have been so widely disseminated. Does any one doubt that the Leghorn, which is one of the purest of breeds, lays better than any other, or can anyone answer why common fowls are not uniform in other respects as well as laying? Are any two common fowls exactly alike? They should be if they possessed fixed qualities, but the fact is they have too many different strains of blood in them. There are the Brahma, Leghorn, Houdan, Plymouth Rock, Hamburgh, Langshan, and Cochin crosses, which give egg production, but prevent uniformity of plumage.

The pure bred is the best for all purposes, and until the common flock is seen that does not prove the excellence of the pure breeds, it will not do for the advocates of common fowls to attempt to disparage breeds that unerringly stamp good qualities on every flock to which they are united.

Geese.—Geese can be fatted cheaply, as they will eagerly consume chopped turnips or any other kind of cheap material at this season, but to get them fat they should have corn also. A goose should not be too fat, as such are objectionable, but they should be fat enough to present an excellent market appearance. The young geese that have not fully completed their growth, cannot be fed too liberally, as they will not become extremely fat until matured. They do not bring as good prices as turkeys, but their flesh is preferred by many, owing to its being free from dryness, and although dark in appearance, is juicy and of good quality. The feathers are an important item, and will pay for the expense of preparation. Considering their freedom from disease, and their willingness to consume all kinds of food, they are very profitable to those who have large flocks.

A goose will lay about twenty eggs, but may be induced to lay as many as thirty if she is removed from the nest, and with good management will hatch two broods. A large goose will cover at least a dozen eggs, and she usually begins to lay about the middle of February or during March. The gander is a faithful attendant, sometimes keeping close to his mate while she is incubating, for the purpose of driving away intruders. The period of incubation is about twenty-nine days. Grass is highly relished by geese, and they may be pastured, but such location should be of a character suitable for close cropping, as geese endeavor to eat tops and roots together. They are very voracious, and eat anything that is fit for food.

They may be plucked for feathers two or three times during the summer, and will yield about a pound of feathers per annum worth from sixty to seventy-five cents. Geese will pair if the proportion of sexes is equal, but three geese may be permitted with one gander as a limit. They are easily restrained within enclosures by clipping their wings.

There are eight varieties of geese—the Wild, Toulouse, Embden, African, White Chinese, Brown Chinese, Egyptian and Sebastopol. The Toulouse and Embden are the largest, and sometimes weigh sixty pounds per pair. The latter is entirely white, and also more prolific than some other breeds. A cross of the Toulouse gander with the Embden goose makes the largest bird for market. The other breeds are more ornamental than useful. The management of goslings should be similar to that of young ducks.

Raising Guineas.—When Guineas are confined they seldom sit, but when given the liberty of the fields, they will hatch broods and rear them under difficulties that would be fatal to other kinds of poultry. The young ones feather very rapidly, and do not need brooding after they are five weeks old, unless the weather is somewhat cold. They are fed the same as young chicks, with the exception that they require meat, finely chopped, at least three times a week. As they feather so rapidly, it is necessary that they be fed often, as they will sometimes suddenly die when a few meals are missed, the feathering demanding a constant supply of nourishment. The question as to the profitableness of Guineas admits of no denial. They may not be as profitable as hens when confined, but they can be raised with such little expense when they are at liberty, as to return a large profit both in eggs and flesh. They are naturally wild, and hide their eggs, but often betray themselves by the noise they make. By watching them going to the nest, or coming off, they are easily detected. The flesh is dark, but contains a delicacy of flavor that approaches to wild game. They are naturally noisy, and create an alarm on the approach of intruders. When Guinea eggs are placed under hens, the best way of hatching is to add a few chicks to the number, by putting hens' eggs in the nest a week after the Guinea eggs are set, and the chicks will teach the young Guineas to obey the hens.

There are two kinds, the Pearl and White Guinea. A Guinea hen usually lays about 100 eggs per annum, and the period of incubation is four weeks. They are monogamous, and mate, but two or more females may be allowed to one cock. They do not scratch, and inflict no damage to gardens.

The Profit from Poultry.—A dozen hens, valued at $9, may pay for all their feed and yield a profit of only 75 cents each. Such a sum would seem very insignificant, but it is 100 per cent. on capital invested. True, the hens require attention and labor, while the expense for buildings must not be overlooked. But buildings are permanent investments, and will last for several seasons, while the labor bestowed upon a single small flock would not be increased if ten times the number were cared for. An attendant would find no difficulty managing several hundred fowls, while 50 cents is estimated as the proportion for each hen to contribute as her share of the expense for the poultry-house.

A dairyman will buy a cow for $75, and build a large barn for his herd. He must not only grow or purchase his grain and other feed fed in his troughs, but he must also provide a pasture. The cows must be milked twice a day, and the milk hauled in all kinds of weather. If butter is made the labor is increased. The capital invested in a single cow, estimating use of land, labor, buildings, and value of the animal, seldom falls below $200, and if the cow gives a profit of $50 per annum she is considered a good one. And yet the dairy business is considered a paying one, although the profit does not reach twenty-five per cent. on capital, but we have allowed it here.

If the poultryman realized twenty-five per cent. on capital invested in poultry he would be dissatisfied. It is a very inferior flock that does not pay fifty per cent., and hundreds of cases may be cited in which two hundred per cent. on capital invested in poultry has been secured.

When it is claimed that poultry returns a larger profit for capital invested, the fact applies to both small and large flocks. If the hens are treated as *stock*, and managed as is done for horses, cattle, sheep, and swine, they give large profits for labor, care, and capital invested, but the great difficulty is that the majority of farmers do not look upon poultry as *stock*. Even where the flocks are overlooked they give good profits on some farms, though the farmer may not be aware of the fact if he keeps no accounts. There are but few instances known in which the hens have failed to more than pay for themselves, and they yield hundreds of eggs to those who have never considered poultry profitable, simply because the amount received is estimated in cents instead of dollars.

Breeding Geese for Feathers.—It is not generally known that this is an important business in West Virginia, but such is the fact. In that State, especially in the western part, the water courses are numerous but not navigable, and railroads are undeveloped. Often fifty or sixty miles must be traversed to reach a railroad station, and in such localities breeding geese for feathers is found to be very profitable. Several pickings are made in a season, and the crop of feathers is duly baled and sent to market by wagon, which is usually at some station, where agents are ready to receive it. We allude to the feather crop of West Virginia in order to state that geese may be made to prove equally as profitable in other localities as well, especially at points possessing limited railroad facilities, as feathers are not heavy enough to interfere with easy hauling, even when there are full loads on the wagons. Geese are partially self-supporting, and work on a pasture or on a pond. They come up regularly at night, protect their young vigorously, and subsist where other fowls would starve, having no competitors except ducks, which they exceed in size.

The carcass of a goose is also salable, the only objection to it being the dark color of the flesh, but a goose is juicy and not dry like a turkey.

Study the Markets.—The market for poultry fluctuates, and should be closely observed. There are times when a seasonable shipment of eggs or poultry will result very favorably, while again, a shipment at an inopportune period may disgust the farmer completely. And yet, the farmers are aware of this fact, although they give themselves no thought of the state of the markets until they are ready to ship, trusting entirely to the honesty of the merchant who receives their stock. When the poultry and eggs reach the market, should prices be down, the farmer concludes that there is no money in the transaction, and denounces everybody but himself, though he alone is to blame.

There are times when shipments from all quarters are large, and for a few days prices are depressed, but by carefully observing the quotations, which are given in nearly all the local newspapers or agricultural journals, the farmer may seize an opportunity and ship at a time when prices are high, or he may hold on until the supply in the market is reduced. At this season he may conclude that the prices will soon advance, and that the supply after Christmas will not be equal to the demand, and there will be short periods when prices will advance for a few days.

Feeding for Eggs and for Market.—At the season when fowls are being marketed, all the poultry cannot be fed alike. Those intended for sale should be separated from those that are to be kept as layers. The food for the market fowls should consist largely of corn, and should be given often and plentifully, while exercise is not desirable. The laying hens, on the contrary, should not be fat, and should be fed only sparingly of corn or fat-producing material. If the laying hens are allowed in the yard with those intended for market, they will soon become worthless, so far as producing eggs is concerned, and will be more profitable if shipped off with the others. And yet we can point to many who feed all their fowls alike, making no distinction and giving no thought to the real object they have in view.

These little matters of management are the turning points of success in poultry. The breeding stock-laying hens must be kept differently from the fattening stock. The horses, cows, sheep, and hogs receive proper consideration in such matters, and the poultry is no exception, though the rule is overlooked so far as its application to them is concerned. It is a loss of time, and also expensive in not feeding properly, and we trust the advice given will be regarded.

Material for the Dust-bath.—The dust-bath is the toilet of the hen. With it she cleans her body and feathers, rids herself of vermin, and delights in the enjoyment it affords. In winter, however, when the ground is frozen hard, it sometimes becomes a difficult matter to provide the hens with a dust-bath, especially if there are several flocks. Now is the time to lay in a supply of dirt for the purpose. The dirt should be fine, and well-sifted, in order that it may be more completely adapted to the purposes intended. Wood ashes are unsuitable, owing to the caustic properties of the potash, which creates sores on the skin should the weather be damp. Finely sifted coal ashes, entirely free from admixture with wood ashes, are excellent, but a full supply is not always obtained. The cheapest and easiest mode is to lay in a supply of dirt, either from the road or the field, but it should be perfectly dry, and stored in a dry place, or it cannot be used when the necessity arises. In winter, a box one yard square and six inches deep, filled within an inch of its top with the dirt, is just what the hens will appreciate. The dirt may remain in the box as long as it is dry and clean, but should be removed at least once a week. By sprinkling a few drops of a solution of carbolic acid in the dust-bath, any unpleasant odors may be removed and the dirt rendered more acceptable.

Useless Qualifications.—The originators of some of the new breeds, while endeavoring to fix certain inherent characteristics, have in the case of some breeds, attached many undesirable features that might be dispensed with. Why the Cochins, Brahmas and Langshans should be encumbered with the heavy leg feathering is a mystery, for the characteristic is a useless one and gives such fowls considerable annoyance. It may be urged that the leg feathering is one of the evidences of purity, but the standard seems to urge the importance of heavy feathering. While the feathers might remain, if bred lightly, the impulse is to have the legs covered completely. The Houdans and Dorkings are also obstructed with an extra toe, while the comb of the Black Spanish and Leghorn often suffers severely in winter, owing to the large size. The breeds should be stripped, by selection, of all such obstructions, which will not detract from the beauty of the

fowls, nor interfere with their usefulness, and yet assist in promoting free dom of movement, exemption from exposure and less liability to disease, while greater comfort is secured. With the many additions now being made to the breeds, the future opens up an opportunity to all, but at present we can do much good by breeding away some of the objections that now pertain to many of the best breeds we have.

Selling Eggs By Weight.—A large egg costs more than a small one, and contains a greater amount of substance. If they were sold by weight the purchaser would get the value of his money, while the seller would secure a price only in proportion to what he furnishes. Of course it will not always be an easy matter to weigh exactly a pound of eggs, but that is no obstacle, as the eggs could be still sold by the dozen with the price based on the weight. For instance, if eggs were 24 cents a pound, and eight weighed one pound, a dozen would be worth 36 cents. No matter what the size of an egg may be, the purchaser would get no more nor less than the full amount by weight equivalent to the price. The poultryman would have nothing to lose. The hens that lay the large eggs will convert a certain amount of food into such eggs, and no more. If they lay extra large eggs they will not lay so often. The hens that lay small eggs may be enbled to make up in numbers what they fail to do in size, but they will use only a proper proportion of food and no more. Eggs as now sold receive no consideration, except for numbers, a dozen small eggs bringing as much as a dozen large ones, except when the purchaser is wise enough to make a distinction, or when the producer considers his own interest by asking a fair price for large eggs, which really cost him more than the smaller ones.

Heating Poultry Houses.—Unless the weather is extremely cold the poultry house will require no heat. It should, however, never be at a lower temperature than 40 degrees above zero, and this can be secured by properly lining a poultry house so as to prevent the entrance of too much cold air. The windows will allow of the entrance and absorption of a large amount of heat during the day, but at night the heat will be radiated away if the glass is not covered on the outside with a piece of batting or a shutter. But in regard to the best method of heating, we would suggest a stove with a sheet iron drum, a stove pipe being connected with the drum so as conduct the heat to the extreme end. Openings may be made in the stove pipe at proper distances, to serve on the principal of registers for egress of the hot air, in order to warm every portion of the house. We do not say that a stove so arranged will *heat* a large poultry house, but it should increase the temperature sufficiently to prevent freezing of the combs and wattles. Too much heat should not be desired, as it will make the hens tender and more susceptible to colds and sudden changes.

Turkeys.—Cross a Bronze gobbler with common hens, and allow six hens with each gobbler as a limit, though fewer are better. Each hen will lay from twenty to forty eggs, according to management. The period of incubation is thirty days. Sixteen eggs constitute a sitting for a hen. Allow the young ones no food for twenty-four hours. Then feed often (but avoid over-feeding), giving food at least every two hours until they feather. The reason of this is that the growth of feathers on young turkeys is very rapid and demands a constant supply of nutrition, hence a single omission of food for a few hours sometimes proves fatal. The feed at first should be

coarse corn meal, which is added to a mixture of milk and eggs. This should be cooked, and an onion chopped up and added to it. After they are three days old, feed mashed potatoes, chopped onions, ground oats and egg, well mixed with milk, and cooked. Milk is always excellent. After they are a week old the egg may be omitted, but a proportion of cooked meat and a little ground bone should be allowed. They may then be allowed grain of all kinds (corn being ground), cooked vegetables and milk. The water should be fresh and clean, one-quarter of a teaspoonful of tincture of iron to be given in every pint of water.

One of the secrets of raising young turkeys is never to allow them to get wet or chilled. The damp grass is fatal. Keep them in a coop with the hen for three or four days, and then allow them to ramble with her *on dry days only*, keeping them in a roomy place on the approach of damp weather. They cannot be confined like chicks, as it is not their nature, but if carefully watched until they are beyond danger they are very hardy and can take care of themselves. Do not attempt to raise turkeys unless you have ample room for them to forage upon, as they are fond of straying off to long distances and easily fly over the highest fences. Keep the male away from the hens while the latter are sitting, or he will eject them from their nests. When on the nest the hen sticks closely, and will nearly starve before she will leave it, consequently her food should not be neglected. Turkeys are subject to the same diseases as chickens, and the remedies in the case of one apply to the other.

There are seven varieties of turkeys—the Wild, Bronze, Narragansett, White, Black, Buff, and Slate; the Bronze and Narragansett being the largest in size, sometimes attaining the weight of forty pounds. All varieties prefer to roost in trees, but may, by being hatched under barnyard hens, be taught to roost in the poultry houses.

How to Raise Chicks.—The best hens for bringing out chickens are Wyandottes and Plymouth Rocks. Some varieties will not sit for the purpose at all, such as Leghorn, Spanish and Houdans. How such fowls perpetuate their species, if their eggs are not hatched by other fowls, we do not know, unless, indeed, that if left to themselves as in a natural state, where the eggs which they lay would not be gathered every day, but left in the nests, they might, when nests get full, take to sitting on them. In a domestic state, however, such varieties seldom get broody, which compels people who wish to breed from them to keep a few fowls of another kind to hatch their eggs. March, April, and May are the best months to hatch chickens, but eggs may be set even in January by those who have houses and wish to have well grown chicks in the summer, either for exhibiting at shows or for early laying. The risk of losing the young broods, however, during cold weather, and extra care and attention they require, certainly do not in ordinary seasons repay the trouble of rearing them. Some varieties may even be very successfully reared later than the months mentioned, owing to the rapidity with which they grow to maturity. Leghorns are perhaps the fastest growers, often beginning to lay before they are four months old. If an increase of eggs is desired in the poultry yard before large sums of money are expended in the purchase of good layers, we would recommend the keeping of no hens after the second year. Three bushels of meal will keep eight hens and one hundred chicks the first month, four bushels the second month, and five bushels the third month.

The Roosts.—The instinct of self-preservation prompts fowls to perch on the highest point they can attain when seeking the quarters at night. This is done because they naturally desire to be far above the reach of danger from below, and they go under shelter to avoid the enemies that fly in the air. This instinct of the fowl is well known, and yet a large majority of breeders construct their roosts in such a manner as to have the rear cross piece higher than the next, and so continuing, until the first one is quite low. If anyone will take a look into the quarters at night after the fowls have retired, it will be seen that no matter how much room there may be on the roosts, a portion of the lower space will be occupied, while the higher poles will be crowded, the fowls being as compactly pressed together as though the packing process had been purposely done to get them all as high as possible.

There are several objections to such roosts, not only so far as the discomfort of the fowls is concerned, but because they are unsightly, unhandy, and filthy. The gridiron roost, with its low and high perches, is an obstacle in the way of cleaning the coop. It takes up unnecessary space, and it compels the heavy fowls to jump higher, at the risk of knocking over the small ones, and an occasional fall is the consequence when coming off. Not only are the feet injured, but bruises and jars to the body are also the result.

Perches should all be on the level with each other, and should be made easily removable. By so doing the fowls will not crowd each other, and the perches can be cleaned and washed with coal-oil occasionally. No injury from getting on and off will occur, and no conflict for preference of position will take place, to say nothing of superior ventilation, etc.

Cleanliness in the Poultry House.—It is a disagreeable task at all times to clean out the poultry houses and coops, but, like every other undertaking, much depends on the systematic manner in which the work is performed. We have seen persons labor hard all day, in the midst of filth, with shovel and hoe, cleaning the poultry house, and when the job was finished but little appearance of cleanliness was added to it. There is an easy, neat, effectual way of cleaning the poultry house, which, if adopted, removes the dread and disgust of the work, and makes it a pleasure instead of an annoyance. The first consideration is the construction of the floors. Dry dirt will not answer, for the reason that it absorbs the impurities, and the filth can only be removed with the dirt, thus entailing the necessity of changing the entire floor and substituting fresh material. We have found the use of the broom to be the cleanest, easiest, and best method of removing the droppings, but in order to do so, the floor must be hard. Wood is the best material, but a wooden floor is liable to become a harboring place for rats, unless it is well closed underneath, or raised sufficiently to allow a cat or terrier to run in and out under it. When this is done the cold air comes up into the poultry house in winter, and makes the wooden floors objectionable. Cement is better, for it not only prevents vermin from entering, but also the drafts. The cheapest way to make such a floor is to take one barrel of lime, two of sand, one of gravel, one bushel of cement, and two gallons liquid coal tar. Mix the ingredients dry, then add water, and spread evenly on a hard surface which has been graveled. The coal tar may be brought to a proper consistency with coal oil. It keeps away lice, and colors the cement. Let the floor remain undisturbed for twenty-four hours, and add another coating in order to stop the cracks.

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